Die Einstellung gegenüber Psychotherapie

Interkulturelle Vergleiche zwischen China und Deutschland

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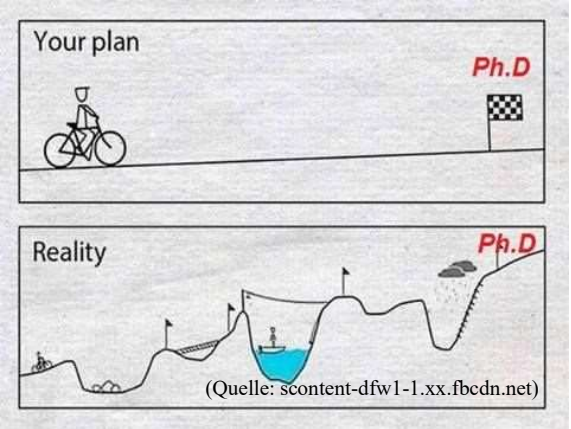
Lesbarkeitserklärung

Aus Gründen der Lesbarkeit wurde in der vorliegenden Dissertation auf die gleichzeitige Verwendung männlicher und weiblicher Sprachformen verzichtet, wenn es sich um Beschreibungen beider Geschlechter handelte. Die männliche Form soll in diesen Fällen explizit als geschlechtsunspezifisch verstanden werden.

Danksagung



Gern möchte ich mit dem Bild, das mich während meiner Promotionszeit immer begleitet hat, den Danksagungsteil beginnen. Wie auf dem Bild dargestellt wird, ist eine Promotion ein Prozess der ständigen Bewältigung von Herausforderungen. Dieses Szenario weicht deutlich von der Vorstellung ab, die zu Beginn der Promotionsarbeit bestand. Ich bin sehr dankbar, dass ich nach der ‚Langzeitdrift auf dem Ozean' und dem langen Aufenthalt in starkem Regen, wie auf dem Bild zu sehen ist, langsam den ‚Berg' hinaufgestiegen und die Arbeit abschließen konnte.

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1 Zusammenfassung und Abstract

1.1 Zusammenfassung

Die Psychotherapie wird heute neben der medikamentösen Behandlung als Hauptbehandlungsmethode für zahlreiche psychische Störungen eingesetzt, wobei die Inanspruchnahme einer Psychotherapie stark von der Einstellung gegenüber dieser abhängt. Mit zunehmendem Interesse an der Forschung über Einstellung gegenüber Psychotherapie wurden in den Studien in den letzten Jahrzehnten herausgestellt, dass jene Einstellung interkulturelle Unterschiede aufweist. So wurde gezeigt, dass Asiaten, einschließlich Chinesen, eine negativere Einstellung gegenüber der Inanspruchnahme einer Psychotherapie haben als Personen aus westlichen Ländern. Allerdings basierte der größte Teil dieser Ergebnisse auf Stichproben aus Chinesen, die in westlichen Ländern leben. Nur wenige Studien untersuchten direkt die Einstellung von Festlandchinesen und Personen aus westlichen Ländern gegenüber Psychotherapie im Vergleich. Das Ziel der vorliegenden Dissertation ist es daher, diesen Unterschied zu untersuchen, wobei die Personen aus westlichen Ländern durch Deutsche repräsentiert wurden.

Dafür wurde zunächst in Studie 1 die Messinvarianz der folgenden Fragebögen untersucht: die Stigma-Skala für den Erhalt psychologischer Hilfe (SSRPH), das Selbststigma des Hilfesuchens (SSOSH) und der Fragebogen zur Einstellung gegenüber Inanspruchnahme eines psychiatrischen Dienstes (IASMHS). Die Messinvarianz stellt eine Voraussetzung für die Verwendung dieser Fragebögen in kulturvergleichenden Studien dar. Es zeigte sich, dass die SSOSH über keine Messinvarianz verfügte. Die SSRPH und der IASMHS zeigten beide akzeptable partielle Messinvarianz und könnten somit für einen interkulturellen Vergleich verwendet werden. Allerdings sollten die Ergebnisse bei Verwendung dieser Skalen für Gruppenvergleiche mit Vorsicht interpretiert werden, da jeweils nur zwei Items messinvariant sind.

Für die Untersuchung des Zusammenhangs zwischen dem Ausmaß des subjektiven Leidens und der Einstellung gegenüber Psychotherapie wurde in Studie 2 die Messinvarianz von den Gesundheitsfragebögen für Patienten (PHQ-15, PHQ-9 und GAD-7) untersucht. Somit wurde die Voraussetzung für die Verwendung jener Fragebögen in einem interkulturellen Vergleich überprüft. Es zeigte sich, dass PHQ-9 und GAD-7 für chinesische und deutsche Studierende messäquivalent sind, wobei einzelne Items kulturelle Unterschiede aufwiesen. Somit erfüllten jene beide Fragebögen die Voraussetzung für den Einsatz in den

kulturvergleichenden Studien in Bezug auf die in der vorliegenden Arbeit untersuchte Gruppen. PHQ-15 zeigte keine skalare Messinvarianz. Die Fragestellung, wie das Ausmaß des subjektiven Leidens mit der Einstellung gegenüber Psychotherapie zusammenhängt, wird in einer Folgestudie nach der vorliegenden Arbeit untersucht.

In Studie 3 wurden die Unterschiede zwischen den Einstellungen gegenüber Psychotherapie von chinesischen und deutschen Studierenden und der Effekt einer kulturellen wertorientierten Intervention (Kollektivismus vs. Individualismus) untersucht. Die Ergebnisse zeigten, dass chinesische Studierende eine negativere Einstellung gegenüber Psychotherapie als deutsche Studierende haben, sowohl vor als auch nach einer kulturellen wertorientierten Intervention. Allerdings konnten keine Unterschiede zwischen der Wirkung individualistisch und der Wirkung kollektivistisch orientierter Interventionen festgestellt werden, obwohl beide Interventionen zur Verbesserung der Einstellung gegenüber Psychotherapie in den zwei kulturellen Gruppen beitrugen.

1.2 Abstract

Psychotherapy is used today, in addition to its use in drug treatment, as the main treatment method for numerous mental disorders, and the use of psychotherapy depends strongly on the attitude toward it. With increasing interest in research on stigma associated with and attitudes toward psychotherapy, studies in recent decades have shown that relevant stigma and attitudes show intercultural differences. It has been shown that Asians, including Chinese, have a more negative attitude toward the use of psychotherapy than people from Western countries. However, most of these results have been based on samples of Chinese living in Western countries. Only a few studies have directly investigated, in comparative fashion, the attitudes of mainland Chinese and Westerners toward psychotherapy. The aim of the present dissertation is therefore to investigate this difference, with individuals from Western countries being represented by Germans.

For this purpose, Study 1 first examined the measurement invariance of the following questionnaires: the Stigma Scale for Receiving Psychological Help (SSRPH), the Self-Stigma of Seeking Help (SSOSH), and the Inventory of Attitudes to Seeking Mental Health Services (IASMHS). Measurement invariance is a prerequisite for the use of these questionnaires in comparative cultural studies. It was found that the SSOSH did not have measurement invariance. The SSRPH and the IASMHS both showed acceptable partial measurement invariance and could thus be used for intercultural comparison. However, when using these

scales for group comparisons, the results should be interpreted with caution, as only two items demonstrated cultural invariance.

In order to investigate the relationship between the extent of subjective suffering and attitudes toward psychotherapy, Study 2 examined the measurement invariance of three patient health questionnaires (PHQ-15, PHQ-9, and GAD-7). Thus, the prerequisite for the use of those questionnaires was checked in an intercultural comparison. It was found that PHQ-9 and GAD-7 are measurement-equivalent for Chinese and German students, with some items showing cultural differences. Thus, both questionnaires fulfilled the prerequisite for use in culture-comparative studies with regard to the groups investigated in this study. PHQ-15 showed no scalar measurement invariance. The question of how the extent of subjective suffering is related to attitudes toward psychotherapy will be investigated in a follow-up study after the present study.

Study 3 examined the differences between the attitudes toward psychotherapy of Chinese and German students and the effect of a cultural value-based intervention (collectivism vs. individualism). The results showed that Chinese students have a more negative attitude toward psychotherapy than do German students, both before and after a cultural value-based intervention. However, no differences were found between the effect of individualistic and collectivistic interventions, although both interventions contributed to improving attitudes toward psychotherapy in the two cultural groups.

2 Theoretischer und empirischer Hintergrund

2.1 Inanspruchnahme professioneller psychologischer Hilfe in China und Deutschland

Obwohl psychische Störungen weltweit auftreten und psychologische Interventionen als das primäre Behandlungsmittel dafür eingesetzt werden, unterscheidet sich die Häufigkeit der Inanspruchnahme von professioneller psychologischer Hilfe in den verschiedenen Ländern deutlich (Wang et al., 2007). Während eine Studie aus dem Jahr 2017 ergab, dass jede dritte Person mit depressiven Symptomen in Deutschland in den letzten 12 Monaten aus dem psychologischen Versorgungssystem in Anspruch nahm (Rommel, Bretschneider, Kroll, Prütz & Thom, 2017), suchten sich Chinesen professionelle Hilfe relativ spät, meist wenn die Ressourcen der Familie erschöpft waren und sie sich bereits in einer Krise befanden (Yeung, Irvine, Ng & Tsang, 2017; Li, Du, Chen, Song & Zheng, 2013). Selbst in relativ entwickelten und fortschrittlichen chinesischen Städten wie Wuhan suchten nur 7,9 Prozent der Einwohner mit depressiven Symptomen eine professionelle psychologische Behandlung innerhalb des letzten Jahres auf (Fang et al., 2019). Frühere interkulturelle Studien zeigten ebenso, dass die Häufigkeit der Inanspruchnahme professioneller psychologischer Hilfe von Asiaten, einschließlich Chinesen, signifikant geringer war als von Personen aus westlichen Ländern, inklusive Deutschland (Kim, 2007; Leong, Chang & Lee, 2007; Wang et al., 2007).

2.2 Einstellung gegenüber Psychotherapie in China und Deutschland

Neben den nichtkulturellen Gründen für die seltene Inanspruchnahme professioneller psychologischer Hilfe, z. B. der Unterentwicklung der psychiatrischen Gesundheitsversorgung insbesondere in ländlichen Gebieten des chinesischen Festlandes (Wang et al., 2007), spielen kulturelle Faktoren wie Stigma, kulturelle Werte und Einstellung zu psychischen Erkrankungen sowie zu Psychotherapie eine wichtige Rolle (Jimenez, Bartels, Cardenas & Alegría, 2013; Kung, 2004; Riedel, 1989). Es ist bereits lange in den Studien bekannt, dass Asiaten, einschließlich Chinesen, eine negativere Einstellung gegenüber dem Aufsuchen professioneller psychologischer Hilfe haben als Personen aus westlichen Ländern. (Chen & Mak, 2008; Jimenez, Bartels, Cardenas, Daliwal & Alegría, 2012; Parker, Chan & Tully, 2006). In den letzten 30 Jahren hat sich jedoch das psychologische Gesundheitsversorgungssystem in China trotz seiner kurzen Geschichte deutlich entwickelt (Zhao, 2017). Die im Jahr 1978 in China eingeführte Reform- und Öffnungspolitik hat nicht nur zu einer starken wirtschaftlichen Entwicklung beigetragen, sondern auch zu einem Einfluss westlicher Wissenschaft, eines westlichen Lebensstils und der Individualität auf die

städtischen Chinesen (Kolstad & Gjesvik, 2014). Es wurde angenommen, dass städtische und gebildete Chinesen somit vermutlich ähnliche Wahrnehmungen von psychischen Erkrankungen hätten wie Personen aus westlichen Ländern und auf eine ähnliche Weise damit umgehen würden (Kolstad & Gjesvik, 2014). Hier fehlt bisher eine interkulturelle empirische Untersuchung.

Trotz der Verbesserung der Bereitschaft in einigen westlichen Ländern wie Deutschland in den letzten zwei Jahrzehnten, professionelle psychologische Hilfe aufzusuchen (Angermeyer, Matschinger, Carta & Schomerus, 2014; Angermeyer, Matschinger & Schomerus, 2013), sind Stigmatisierung im Zusammenhang mit und eine negative Einstellung gegenüber Psychotherapie jedoch weiterhin in Deutschland weit verbreitet. In einer Studie von Albani, Blaser, Rusch und Brähler (2013) zeigte sich, dass sich etwa ein Drittel der befragten Deutschen nicht vorstellen konnte, eine Psychotherapie aufsuchen zu müssen. Darüber hinaus gaben 7,9 % der Befragten an, dass sie es vorziehen würden, den Kontakt mit einem Nachbarn zu vermeiden, wenn sie erführen, dass er sich derzeit in einer psychotherapeutischen Behandlung befindet.

2.3 Theoretischer Hintergrund zur Einstellung

2.3.1 Stigma und Einstellung gegenüber Psychotherapie

Die Einstellung zur Suche nach professioneller Hilfe bei psychischen Erkrankungen hängt mit zwischenmenschlichen Prozessen und Persönlichkeitskomponenten zusammen (Fischer & Turner, 1970). Menschen können von dieser Suche abgehalten werden, weil sie befürchten, stigmatisiert zu werden, nicht bereit oder nicht in der Lage zu sein, Gefühle und Erfahrungen, persönliche Vorurteile und Überzeugungen bei einer professionellen Behandlung offenzulegen (Fischer & Turner, 1970). Corrigan und Watson (2002) unterscheiden zwei Arten eines Stigmas: Selbststigma und öffentliches Stigma.

Selbststigma besteht in der Anwendung von Stereotypen und Vorurteilen gegenüber Menschen mit psychischen Erkrankungen auf sich selbst und der daraus resultierenden Selbstdiskriminierung (Corrigan & Watson, 2002). Dies führt zu geringem Selbstwertgefühl, geringer Selbstwirksamkeit und dem Versäumnis, die Möglichkeiten der Gesundheitsversorgung zu nutzen (Corrigan & Watson, 2002). Die Hypothese, dass Selbststigma mit einer negativen Einstellung zur Suche nach Hilfe bei psychischen Erkrankungen verbunden ist, wurde in verschiedenen Stichproben, unter anderem mit Studenten, bestätigt (Cheng, Wang, McDermott, Kridel, & Rislin, 2018; Cheng, Mcdermott,

& Lopez, 2015; Jennings et al., 2015; McDermott, Currier, Naylor, & Kuhlman, 2017; Mullen & Crowe, 2017).

Soziales Stigma ist als eine Reihe negativer Einstellungen und Überzeugungen definiert, die zu Angst, Ablehnung, Vermeidung und Diskriminierung von Menschen mit psychischen Erkrankungen führen (Corrigan & Watson, 2002). Dass es zu einem Selbststigma führen könnte, wurde in einer Längsschnittstudie (Vogel, Bitman, Hammer, & Wade, 2013) bestätigt. Diese ergab, dass sich über das soziale Stigma das Selbststigma drei Monate im Voraus einschätzen lässt.

Der Zusammenhang zwischen Selbststigma, sozialem Stigma und der Einstellung gegenüber der Inanspruchnahme von psychologischer professioneller Hilfe wird durch das Modell nach Vogel et al. (2017) in Abbildung 1 verdeutlicht. In ihrer Studie (Vogel et al., 2017) wurde angenommen, dass das soziale Stigma die Einstellung zur psychologischen Hilfe durch das Selbststigma als Mediator beeinflusst. Laut dieser Studie korrelieren soziales Stigma und Selbststigma stark miteinander. Letzteres korreliert ebenso mit der Einstellung zur psychologischen Hilfe und diese wiederum mit der Bereitschaft, sie zu nutzen.

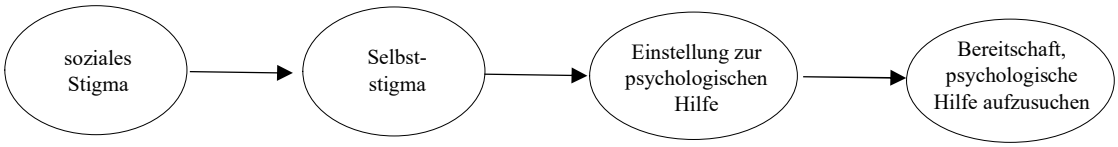

Abbildung 1: Modell nach Vogel et al. (2007)

2.3.2 Einstellung-Verhalten-Forschung

Die Auswirkungen von Einstellungen auf Verhaltensweisen sind ein wachsendes Forschungsthema in der Psychologie. Bekannte Einstellung-Verhalten-Theorien sind die des überlegten Handelns (Fishbein & Ajzen, 1975), die des geplanten Verhaltens (Ajzen, 1985, 1991) sowie das überlegte Handlungsmodell (Fishbein & Ajzen, 2010).

2.3.2.1 Die Theorien des überlegten und des geplanten Handelns

Die Theorie des überlegten Handelns (Fishbein & Ajzen, 1975) zielt darauf ab, das menschliche Verhalten im Zusammenhang mit Einstellungen zu erklären. Demnach führt die Kombination von der Einstellung (Bewertung der wahrscheinlichen Folgen des Verhaltens) und der subjektiven Norm (eine Person glaubt, dass andere Personen das Verhalten von ihr

wünschen) zu einer Bereitschaft des Handelns. Somit wird die Wahrscheinlichkeit beeinflusst, ob diese Person das Verhalten ausführen wird. Auf dieser Theorie basierend hat die Theorie des geplanten Handelns (Ajzen, 1991) zusätzlich die wahrgenommene Verhaltenskontrolle berücksichtigt: die wahrgenommene Mühelosigkeit oder Schwierigkeit, das Verhalten auszuführen.

2.3.2.2 Das überlegte Handlungsmodell

Im Jahr 2010 haben Fishbein und Ajzen (2010) ihre oben beschriebenen zwei Theorien aktualisiert und in das überlegte Handlungsmodell (Abbildung 2) integriert. Dabei wurden die eigenen Fähigkeiten und Ressourcen, das Verhalten auszuführen, sowie verschiedene Hintergrundvariablen berücksichtigt. Diese wurden drei Aspekten zugeordnet: individueller Hintergrund (emotionaler Zustand, Werteeinstellung, Stereotypen usw.), sozialer Hintergrund (Bildung, ethnische Zugehörigkeit, Kultur usw.) sowie Information (Wissen, Medien und Intervention). Diese Hintergrundfaktoren beeinflussen Verhaltens-, normative und Kontrollüberzeugungen und somit die Einstellung gegenüber dem Verhalten, die wahrgenommenen Norm und die wahrgenommene Verhaltenskontrolle. Die Absicht, ein bestimmtes Verhalten auszuführen, könnte durch diese drei Komponenten mit hoher Genauigkeit vorhergesagt werden.

Das überlegte Handlungsmodell hat in den Sozial- und Gesundheitswissenschaften großen Einfluss ausgeübt und zählt zu den am weitesten verbreiteten kognitiven Modellen der Einstellung-Verhaltens-Beziehung. Es wurde in einer Reihe von Studien verwendet, um unterschiedliche Absichten und Verhaltensweisen vorherzusagen, einschließlich gesundheitsbezogener und hilfesuchender Verhaltensweisen (Arevalo & Brown, 2019; Ellis & Helaire, 2020; Kuo, Roldan-Bau, & Lowinger, 2015; Thomas & Tagler, 2019).

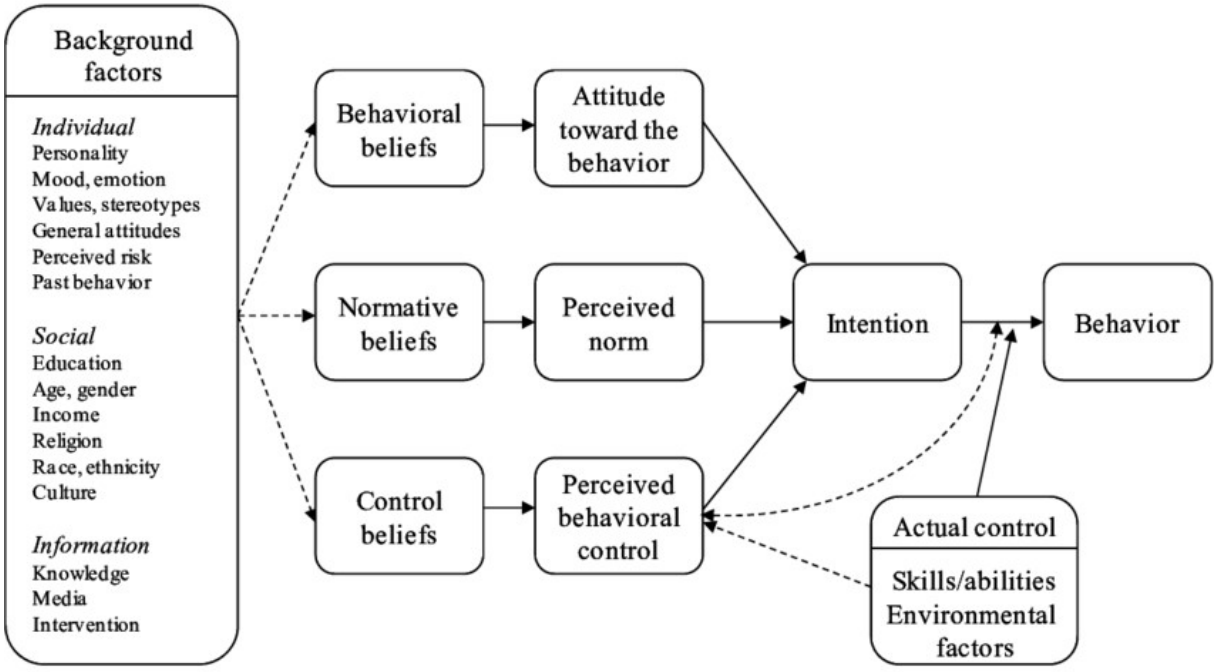

Abbildung 2: Das überlegte Handlungsmodell (Fishbein & Ajzen, 2010)

Im Hinblick auf die Inanspruchnahme von Psychotherapie ist nach dem überlegten Handlungsmodell von Fishbein und Aizen (2010) neben der wahrgenommenen Norm und der wahrgenommenen Verhaltenskontrolle die Einstellung gegenüber dem Aufsuchen einer Psychotherapie bedeutsam. Die wahrgenommene Norm bezieht sich hier auf den wahrgenommenen sozialen Druck von einer Person, ob sie eine Psychotherapie aufsuchen sollte oder nicht. Wahrgenommene Verhaltenskontrolle bedeutet in diesem Kontext die Wahrnehmung einer Person hinsichtlich ihrer Fähigkeit, ob sie eine Psychotherapie in Anspruch nehmen könnte oder nicht (z. B. Verfügbarkeit der Psychotherapie, Kosten, Zeit usw.).

2.4 Methodische Probleme der kulturvergleichenden Psychologie

Bei der Durchführung von Kulturvergleichen und bei der Beschäftigung mit interkulturellen Fragestellungen sind die methodischen Probleme, v. a. die Vergleichbarkeit psychischer Phänomene in Kulturen mit unterschiedlicher Denkweise, Sprache und Wertvorstellungen, eine Herausforderung (Hede, 2013). Die Untersuchung möglicher kultureller Unterschiede bei der Messung der Einstellung gegenüber professioneller psychologischer Hilfe ist notwendig, da die Rolle psychologischer Interventionen in der chinesischen und der deutschen Kultur unterschiedlich sein kann. Während moderne Psychotherapie im deutschsprachigen Raum seit über 100 Jahren als Behandlung psychischer

Erkrankungen angewendet wird, ist ihre Geschichte in China wesentlich kürzer und wird von den Entwicklungen des chinesischen Gesundheitssystems und von chinesischen Traditionen beeinflusst. Deshalb besteht der erste Schritt beim interkulturellen Vergleich der unterschiedlichen Einstellungen gegenüber Psychotherapie darin, zu prüfen, ob die Messinstrumente kulturübergreifend gültig sind (Miller & Sheu, 2008). Messinstrumente z. B. Skalen gelten als kulturübergreifend vergleichbar, wenn die Messbeziehung zwischen den beobachteten Indikatoren und den ihnen zugrunde liegenden latenten Variablen in verschiedenen Kulturgruppen gleich ist (Vandenberg & Lance, 2000). „Nur so ist sichergestellt, dass tatsächlich die gleichen Konstrukte verglichen werden und dass z. B. bei gleicher Ausprägung eines latenten Merkmals in allen Gruppen auch für die Indikatoren jeweils die gleichen Werte in den Gruppen zu erwarten sind“ (Temme & Hildebrandt, 2009). Länderspezifische Differenzen in den Mittelwerten der Skalen können aus Unterschieden bezüglich des Verständnisses bestimmter Konzepte, aus Übersetzungsproblemen oder anderen Messfehlern resultieren. Dies könnte bedeuten, dass eine Skala die substanziellen Unterschiede zwischen den Kulturen nicht exakt erfasst. Daher sollte die Messäquivalenz der Fragebögen zur Messung von Stigmata und der Einstellung gegenüber Psychotherapie sowie der anderen relevanten Fragebögen vor ihrem Einsatz in einem Kulturvergleich überprüft werden.

2.4.1 Messinvarianz-Analyse

Es gibt zwei Ansätze der Messäquivalenz-Analyse: den Item-Response-Theorie-basierten Differential-Functioning-Ansatz (DIF) und die mehrgruppen-konfirmatorische Faktorenanalyse (CFA). Obwohl diese beiden Ansätze ähnliche Konzepte und Verfahren beinhalten (Meade & Lautenschlager, 2004; Stark, Chernyshenko, & Drasgow, 2006), ist die CFA dem DIF hinsichtlich der Analyse der Multiple-Choice-Testdaten überlegen (Tay, Meade, & Cao, 2015). Außerdem ist die DIF für mehrdimensionale Modelle bisher weniger etabliert.

Die CFA bietet einen robusten statistischen Rahmen für die Prüfung der Messäquivalenz, auch Messinvarianz genannt. Miller und Sheu (2008) schlugen drei am häufigsten bewertete Niveaus der Messinvarianz vor: konfigurale, metrische und skalare Invarianz. Diese sind einer hierarchischen Struktur inhärent; sie bauen aufeinander auf. Eine konfigurale Invarianz liegt vor, wenn die Anzahl der Faktoren und das Muster der Faktorladungen zwischen den latenten Variablen und Indikatoren in den Vergleichsgruppen ähnlich sind. Eine metrische Invarianz liegt vor, wenn die Faktorladungen der Items zwischen

den Gruppen invariant sind. Die strikte faktorielle Invarianz/skalare Invarianz liegt vor, wenn sowohl die Faktorladungen als auch die Schnittpunkte zwischen den Gruppen invariant sind. Inhaltlich bedeutet dieser Grad der Invarianz, dass das beobachtete Merkmal über die Gruppen hinweg auf einer gemeinsamen Skala abgebildet werden kann, z. B. durch einen gemeinsamen Nullpunkt. Der Nachweis von skalarer oder zumindest teilweiser skalarer Invarianz ist eine Voraussetzung für den Vergleich latenter Mittelwerte aus Unterproben (Brown, 2006; Bryne, Shavelson, & Muthén, 1989). Fehlende Invarianz kann relevante Informationen darüber liefern, wie verschiedene Gruppen dasselbe Konstrukt interpretieren (Putnick & Bornstein, 2016).

2.5 Intervention mit Berücksichtigung der kulturellen Faktoren

2.5.1 Kultur und Kulturdimensionen

Je nachdem, welcher Schwerpunkt im wissenschaftlichen Forschungsgebiet (z. B. Soziologie, Psychologie, Philosophie usw.) gesetzt wird, wird Kultur unterschiedlich definiert; diese Vielfalt ist durch die Komplexität der Kultur bedingt (Genkova, 2019). Laut Helfrich ist Kultur *„die Gesamtheit der innerhalb einer sozialen Gemeinschaft geteilten Lebenswelt und umfasst sowohl die äußeren Umgebungsbedingungen als auch die Muster des Denkens, Empfindens und Handelns*“ (2019).

Eine Möglichkeit zur Beschreibung und Klassifizierung der Kultur ist das Kulturdimensionen-Modell, in dem kulturelle Faktoren als Dimensionen konzipiert werden, in denen sich jede Kultur als spezifische Ausprägungskombination repräsentieren lässt (Helfrich, 2019). Einer der wesentlichsten sowie einflussreichsten dieser dimensionalen Ansätze sind die Kulturdimensionen nach Hofstede (Hofstede, Hofstede, & Minkov, 2010; Inglehart & Welzel, 2010).

Die aktuellste von Hofstedes Theorien schlug sechs Dimensionen vor. Die ersten vier sind aus dem ursprünglichem Modell vom Hofstede (Hofstede & Hofstede, 2006) und wurden später durch zwei andere (Hofstede et al., 2010) ergänzt:

- Individualismus/Kollektivismus (Ausmaß der Eingebundenheit in das soziale Umfeld),
- Vermeidung von Unsicherheiten (die Toleranz einer Gesellschaft gegenüber Mehrdeutigkeiten der unbekannten oder ungeregelten Situationen),
- Machtdistanz (Stärke der sozialen Hierarchie),
- Männlichkeit/Weiblichkeit (Aufgabenorientierung versus Personenorientierung),

- Zeitorientierung bzw. konfuzianische Dynamik (kurzfristige versus langfristige Zeitorientierung),
- Nachsicht/Zurückhaltung (Ausmaß der Freiheit, den die gesellschaftlichen Normen den Bürgern bei der Erfüllung ihrer menschlichen Wünsche gewähren).

2.5.1.1 Individualismus und Kollektivismus

Die Dimension Individualismus/Kollektivismus wurde in der kulturvergleichenden Psychologie am intensivsten erforscht, vor allem aus psychologischer Perspektive, weil „*sie die Ausprägungen der Beziehungen zwischen den Individuen ordnet und verschiedene persönliche Besonderheiten im Denken und Verhalten veranschaulicht*“ und „*als einer der wesentlichen Faktoren für ein Kulturmodell in seiner aktuellen Repräsentation sowie in seiner geschichtlichen Entwicklung*“ gilt (Genkova, 2019). Individualismus basiert auf der Grundannahme der Rationalität und der Vernunft und Kollektivismus auf der Verbundenheit bzw. Beziehungen (Kim, Triandis, Kagitcibasi, Choi, & Yoon, 1994). Darauf beruhen unterschiedliche Prinzipien und Regeln (Abbildung 3).

Basierend auf zahlreichen kulturvergleichenden Forschungen haben Triandis et al. (1995; 1998) Individualismus/Kollektivismus nach vertikalen und horizontalen sozialen Beziehungen weiter differenziert. Diesbezüglich wurden vier Subkategorien aufgebaut: vertikaler Kollektivismus („das Selbst als Teil eines Kollektivs wahrnehmen und Ungleichheiten innerhalb des Kollektivs akzeptieren“); horizontaler Kollektivismus („das Selbst als Teil des Kollektivs wahrnehmen, aber alle Mitglieder des Kollektivs als gleich sehen“); vertikaler Individualismus („die Konzeption eines autonomen Individuums und Akzeptanz von Ungleichheit“) und horizontaler Individualismus („die Konzeption eines autonomen Individuums und Betonung der Gleichheit“).

2.5.1.2 Individualismus/Kollektivismus in China und Deutschland

Nach Hofstedes Individualismus-Index (https://www.hofstede-insights.com/product/compare-countries/) hat China einen individualistischen Wert von 20, was als typisch für eine kollektivistische Kultur gilt. Deutschland hingegen hat einen Wert von 67, was als Ausdruck einer individualistischen Kultur angesehen wird. Allerdings basieren diese Zahlen auf den Analysen einer großen Datenbank von Mitarbeiterbefragungen, die zwischen den Jahren 1967 und 1973 innerhalb von IBM gesammelt wurden, und nachfolgenden länderübergreifenden Studien, die zwischen den Jahren 1990 und 2002

durchgeführt wurden (Hofstede et al., 2010). Aufgrund fehlender weiterer Folgestudien liegen keine aktuelle Werte der Länder auf dieser Dimension vor.

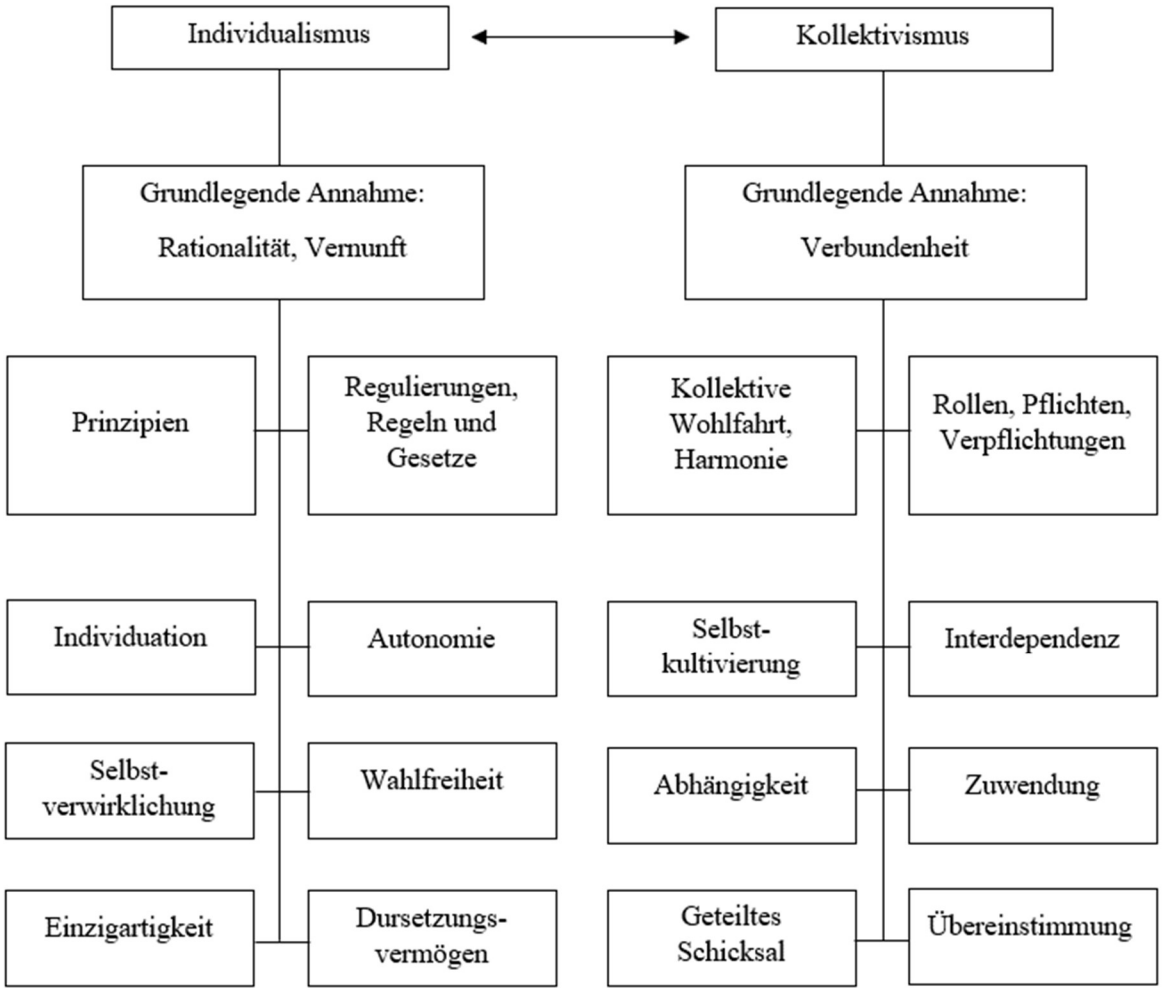

Abbildung 3: Individualismus und Kollektivismus: ein integrativer Rahmen (Kim et al., 1994; zitiert nach Genkova, 2019)

2.5.2 Werte als Kern der Kultur

Kollektivismus und Individualismus sind die Globalmerkmale einer Kultur und werden unter anderem durch Einstellungen, Werte, Glauben, Normen, Verhaltensmuster ausgedrückt, wobei Werte den Kern der Kultur darstellen (Genkova, 2019; Triandis, 2018). Werte werden von Genkonva (2019) als „*Konzepte oder Überzeugungen für erwünschte finale Ziele oder Verhaltensweisen*“ definiert, „*welche in bestimmten Situationen Überlegenheit schaffen, die die Wahl oder die Einschätzung der Ereignisse und des Verhaltens bestimmen und die nach ihren relativen Bedeutungen in eine Rangordnung gebracht werden können“*.

Zu den Werten im kollektivistischen Kulturkontext gehören zum Beispiel eine klarere Identitätsfindung im sozialen Netzwerk, dem eine Person angehört, die Aufrechterhaltung der Harmonie in der zwischenmenschlichen Beziehung und die Vermeidung von Konflikten. Im individualistischen kulturellen Kontext bestehen die Werte darin, sich selbst als einzigartiges Individuum zu definieren und Selbstverwirklichung sowie -entfaltung zu betonen (Triandis, 1988). Doch sowohl die chinesische als auch die deutsche Gesellschaft sind im Wandel begriffen, obwohl sich China in den letzten Jahrzehnten schneller entwickelt hat. Nur wenige Studien (Ma, Hu, & Gocłowska, 2016) haben die aktuellen chinesischen und deutschen Kulturwerte, insbesondere bei der jüngeren Generation, untersucht.

2.5.3 Kulturelle wertorientierte Intervention

Um die Einstellung gegenüber psychischen Störungen und bezüglich der Inanspruchnahme einer Psychotherapie zu verbessern, wurden zahlreiche Interventionen durchgeführt (Clement et al., 2013; Evans-Lacko et al., 2013; Hadlaczky, Hökby, Mkrtchian, Carli & Wasserman, 2014; Kohls et al., 2017; Schomerus et al., 2016), meistens in Nordamerika, Australien und Europa (Clement et al., 2013; Corrigan, Morris, Michaels, Rafacz & Rüsch, 2012; Hadlaczky et al., 2014; Xu et al., 2018). In asiatischen Ländern wie China gab es bisher nur wenige solcher öffentlichen bevölkerungsorientierten Interventionen (Xu et al., 2018), obwohl der potenzielle Bedarf der Bevölkerung an psychologischer professioneller Hilfe groß ist (Huang et al., 2019; Xiang, Zhang, Wang, Zeng, & Ungvari, 2019) und die Bemühungen zur Verbesserung der Einstellung gegenüber Psychotherapie von signifikanter Bedeutung wäre. Die in den westlichen Ländern bereits durchgeführten Interventionen können nicht unmittelbar ohne Anpassung an die chinesische Kultur in China angewendet werden, denn trotz Gemeinsamkeiten gibt es in verschiedenen Kulturkreisen kulturbedingte Gründe, die erklären, warum Personen keine professionelle psychologische Hilfe aufsuchen.

Aufgrund der im vorigen Absatz angesprochenen Problematik ist ein neuartiger Ansatz dringend erforderlich. Ein solcher Ansatz könnte eine kulturwertorientierte Intervention sein, weil traditionelle chinesische Kulturwerte trotz der schnellen Entwicklung des psychiatrischen Versorgungssystems in China (Zhao, 2017) weiterhin einen bedeutenden Einfluss auf die Inanspruchnahme professioneller psychologischer Hilfe haben (Chen & Mak, 2008; Winnie W. Kung, 2004). Kulturforscher gehen davon aus, dass das Selbstkonzept des Individuums in einer kollektivistischen Gesellschaft in Ostasien wie in China in ihrer Verbundenheit mit anderen Menschen ist (Kim & Markus, 1999; Kühnen & Hannover, 2003;

Markus & Kitayama, 1991). Zwischenmenschliche Harmonien, soziale Verpflichtungen und Interdependenz werden dort stärker betont als in westlichen Kulturen (Ng & James, 2013; Shea, Yang & Leong, 2010). Die Psychotherapie im modernen Sinne entwickelte sich jedoch hauptsächlich in westlichen Ländern, die stark von westlichen Werten wie Optimismus, Individualismus und der Ermutigung zur persönlichen Veränderung geprägt sind (Draguns, 2008). Im Gegensatz dazu werden in der chinesischen indigenen Therapie Werte wie Harmonie, Kollektivismus und Enthaltsamkeit betont (Liu & Leung, 2010). Um die Anwendbarkeit der westlichen Psychotherapie in einem chinesischen kulturellen Kontext zu gewährleisten, sollte diese an die chinesische Kultur angepasst werden. Eine solche kulturelle Anpassung könnte auch auf die Interventionen übertragen werden, um die Einstellung in der Bevölkerung gegenüber Psychotherapie zu verbessern.

Die kulturwertorientierte Intervention basiert auf dem überlegten Handlungsmodell von Fishbein und Ajzen (2010), das im vorherigen Teil dieser Dissertation vorgestellt wurde und den Zusammenhang zwischen Einstellung und Verhalten erklärt. Nach dieser Theorie könnte davon ausgegangen werden, dass es zu einer Veränderung der Einstellung gegenüber der Inanspruchnahme einer Psychotherapie im Fall von psychischen Störungen kommen könnte, wenn eine Person sich dem möglichen Nutzen einer Psychotherapie bewusst wäre, die ihre subjektiven Werte (z. B. kulturelle Wert) widerspiegelt.

Die aktuell bestehenden Interventionen sind defizitorientiert und sind auf den Abbau von Hindernissen wie der Stigmatisierung gegenüber psychischen Störungen sowie auf die Inanspruchnahme einer Psychotherapie ausgerichtet (Corrigan et al., 2012; Griffiths, Carron-Arthur, Parsons & Reid, 2014). Es wäre sinnvoll, herauszufinden, ob eine kulturwertorientierte Intervention, bei der den Nutzen der Psychotherapie und die Vermittlung von kulturellen wertebetonenden Therapiezielen im Fokus stehen, auch zur Verbesserung der Einstellung gegenüber Psychotherapie beitragen könnte. Solche Interventionen könnten nicht nur für asiatische Länder wie China eine neue Perspektive schaffen, sondern auch die bestehenden Interventionen in westlichen Ländern wie Deutschland ergänzen.

3 Darstellung des Dissertationsvorhabens und Herleitung der Fragestellungen

Im Zusammenhang mit der schnellen wirtschaftlichen und sozialen Entwicklung Chinas und dem dadurch bedingten psychischen Stress legen Menschen in China zunehmend Wert auf psychische Gesundheit. Dieser gesellschaftlichen Nachfrage folgend wurde ein psychologisches Versorgungssystem mit psychologischer Beratung und Behandlung anhand eines westlichen Modells in China zügig aufgebaut (Zhao, 2017). Doch wie unterscheiden sich die Einstellungen von Festlandchinesen und von Personen in westlichen Ländern wie Deutschland gegenüber Inanspruchnahme einer Psychotherapie voneinander, insbesondere bei der jüngeren Generation, die neuen Entwicklungen offener gegenübersteht?

Anhand dieser Fragestellungen wird zunächst die Messinvarianz der Fragebögen zur Messung von Stigmata und der Einstellung gegenüber dem Aufsuchen von professioneller psychologischer Hilfe in der chinesischen und deutschen Kultur in Stichproben aus Studierenden untersucht: die Stigma-Skala für den Erhalt psychologischer Hilfe (SSRPH), das Selbststigma des Hilfesuchens (SSOSH) und der Fragebogen zur Einstellung gegenüber Inanspruchnahme eines psychiatrischen Dienstes (IASMHS) (Studie 1). Da das Ausmaß des subjektiven Leidens eine bedeutende Voraussetzung für die Inanspruchnahme einer Psychotherapie ist, wird davon ausgegangen, dass es ebenfalls die Einstellung gegenüber Psychotherapie beeinflussen wird. Dementsprechend wird die Voraussetzung, d. h. die Messinvarianz, für die Verwendung von den Gesundheitsfragebögen (PHQ-15, PHQ-9 sowie GAD-7) in einem interkulturellen Vergleich überprüft (Studie 2). Anschließend werden die unterschiedlichen Einstellungen von chinesischen und deutschen Studierende gegenüber Psychotherapie verglichen (Studie 3). Da die bisherigen Interventionen zur Verbesserung der Einstellung gegenüber Psychotherapie defizitorientiert sind und eine Intervention kulturell angepasst sein sollte, wird untersucht, ob die Einstellung gegenüber Psychotherapie in den beiden Kulturen durch eine kulturelle wertorientierte Intervention verbessert werden können (Studie 3). Gleichzeitig wird untersucht, wie sich die Effekte dieser Intervention unter Besichtigung der kulturellen Aspekte in diesen zwei Ländern unterscheiden. Als Probandengruppe, die in der vorliegenden Dissertation befragt wurden, wurden Studierende gewählt, weil die Untersuchung von Studierenden den Vorteilen der Vergleichbarkeit von Bildungsstatus, Alter und kulturellem Hintergrund anbietet.

Zusammenfassend ergeben sich für die vorliegende Dissertation folgende konkrete Fragestellungen:

1. Ist eine interkulturelle Messinvarianz der Fragebögen zur Messung des Stigmas und der Einstellung chinesischer und deutscher Studierender gegenüber Psychotherapie (SSRPH, SSOSH und IASMHS) vorhanden? (Studie 1)

2. Ist eine interkulturelle Messinvarianz der Fragebögen zur Messung vom Ausmaß des subjektiven Leidens von chinesischen und deutschen Studierenden durch PHQ-15, PHQ-9 und GAD-5 vorhanden? (Studie 2)

3. Unterscheiden sich die Einstellungen chinesischer und deutscher Studierender gegenüber Psychotherapie? (Studie 3)

4. Würde eine kulturorientierte Intervention die Einstellung gegenüber Psychotherapie in der chinesischen und deutschen Kultur verbessern? Wie unterscheiden sich die Effekte dieser Intervention unter Berücksichtigung der kulturellen Aspekte in diesen zwei Ländern? (Studie 3)

5. Inwieweit besteht ein Zusammenhang zwischen dem Ausmaß des subjektiven Leidens und der Einstellung gegenüber Psychotherapie unter Berücksichtigung des kulturellen Kontextes? (weitere Studie folgt)

4 Zusammenfassung der Studien

4.1 Studie 1. Die interkulturelle Messinvarianz der Fragebögen zur Messung vom Stigma und der Einstellung gegenüber der Inanspruchnahme professioneller psychologischer Hilfe

Zitation: Zhou, Y., Lemmer, G., Xu, J. & Rief, W. (2019). Cross-cultural measurement invariance of scales assessing stigma and attitude to seeking professional psychological help. *Frontiers in Psychology.* https://doi.org/10.3389/fpsyg.2019.01249.

Hintergrund: Es fehlen Studien, die untersuchen, wie sich die Einstellung von in Festlandchina lebenden Chinesen von den Personen aus westlichen Ländern gegenüber Psychotherapie unterscheidet. Bevor diese Einstellung der Personen aus jenen zwei kulturellen Gruppen verglichen wird, soll die Messäquivalenz der Messinstrumente überprüft werden. Das Ziel der Studie bestand darin, die Messinvarianz der weitverbreiteten (1) Stigma-Skala für den Erhalt psychologischer Hilfe (SSRPH), (2) das Selbststigma des Hilfeaufsuchens (SSOSH) und (3) den Fragebogen zur Einstellung gegenüber der Inanspruchnahme eines psychiatrischen Dienstes (IASMHS) zu untersuchen.

Methode: Die Daten wurden online bei Gruppen von chinesischen Studierenden in China (n = 413) und deutschen Studierenden in Deutschland (n = 416) erhoben. Die Übersetzung der Fragebögen wurde mit der üblichen, von Brislin (1970) empfohlenen Methode der Übersetzung-Rückübersetzung erstellt. Die sich aus der Übersetzung ergebenden semantischen Unterschiede wurden diskutiert und die endgültigen Versionen der Übersetzung wurden festgelegt. Zur Überprüfung der gruppenübergreifenden Äquivalenz der drei Fragebögen wurden die konfirmatorische Faktorenanalyse in Einzelstichproben und die interkulturelle Messinvarianzanalyse bezüglich der zwei Gruppen durchgeführt. Dabei wurde die Messinvarianz auf den folgenden drei Ebenen nacheinander überprüft: konfigurale Messinvarianz, metrische Messinvarianz und skalare Messinvarianz. Diese Messinvarianz obliegen einer hierarchischen Struktur und bauen folglich aufeinander auf. Latente Mittelwerte wurden verglichen, wenn Hinweise auf eine skalare Invarianz oder partielle skalare Invarianz vorlagen.

Ergebnisse: Die Ergebnisse zeigen, dass die SSRPH und das modifizierte Modell der IASMHS eine partielle skalare Messinvarianz aufwiesen, die SSRPH aber eine kulturelle Varianz in der Faktorstruktur zeigte. Der Vergleich der latenten Mittelwerte zeigte keine Unterschiede zwischen den beiden Gruppen in Bezug auf das soziale Stigma im Zusammenhang mit der Inanspruchnahme von professioneller psychologischer Hilfe, aber

eine höhere psychologische Offenheit der chinesischen Studierenden bezüglich des Aufsuchens von professioneller psychologischer Hilfe.

Diskussion: Insgesamt zeigt diese Studie eine akzeptable Messinvarianz für die SSRPH und zwei Items der IASMHS. Somit können diese Skalen oder Items für einen interkulturellen Vergleich verwendet werden. Die von uns berichteten Gruppenvergleiche sind mit Vorsicht zu interpretieren, da sie nur auf zwei Items der jeweiligen Skala basieren, die eine kulturelle Invarianz aufweisen. Der SSOSH kann nicht für einen interkulturellen Vergleich den beiden Gruppen verwendet werden. Es besteht Untersuchungsbedarf bei der Entwicklung eines interkulturell gültigen Konzeptes der Stigmatisierung bezüglich psychologischer Hilfe und der Einstellung gegenüber Psychotherapie.

4.2 Studie 2. Die interkulturelle Messinvarianz von PHQ-15, PHQ-9 und GAD-7

Zitation: Zhou, Y., Xu, J. & Rief, W. (2020) Are comparisons of mental disorders between Chinese and German students possible? An examination of measurement invariance for the PHQ-15, PHQ-9 and GAD-7. *BMC Psychiatry* 20, 480. https://doi.org/10.1186/s12888-020-02859-8

Hintergrund: Vorherige Studien zeigten, dass die Prävalenz von Depressionen und Angststörungen in China niedriger ist als in europäischen und amerikanischen Ländern und die interkulturellen Vergleiche der Prävalenz somatoformer Störungen uneinheitlich sind. Es wird darauf hingewiesen, dass länderübergreifende Unterschiede entweder echte Prävalenzunterschiede oder die interkulturelle Unempfindlichkeit von Diagnosekriterien, die im „Diagnostisches und statistisches Handbuch Psychischer Störungen“ (DSM) und „Internationale Klassifikation der Krankheiten“ (ICD) zu finden sind, widerspiegeln können. Allerdings fehlt eine tiefere interkulturelle Untersuchung dieser Unterschiede. Um die interkulturellen Unterschiede bezüglich der Prävalenz dieser psychischen Störungen genau untersuchen zu können, müssen diagnostische Messinstrumente wie der Gesundheitsfragebogen für Patienten (PHQ), eine der am häufigsten verwendeten Instrumente zur Beurteilung der Psychopathologie, kulturinvariant sein. Studie 2 untersuchte die Messinvarianz der Gesundheitsfragebögen: Somatische Symptom-Skala (PHQ-15), depressive Symptom-Skala (PHQ-9) und die 7-Items-Skala der Generalisierten Angststörung (GAD-7) als Voraussetzung für die Verwendung jener Fragebögen in interkulturell vergleichenden Prävalenzstudien.

Methode: Es wurden online erfasste Daten von Gruppen chinesischer Studierender in China (n = 413) und deutscher Studierender in Deutschland (n = 416) verwendet. Die in früheren Studien validierten deutschen und chinesischen Versionen von PHQ-15, PHQ-9 und GAD-7 wurden ebenfalls verwendet. Zunächst wurden für jede Gruppe separate Messmodelle unter Verwendung der konfirmatorischen Faktoranalyse (CFA) untersucht. Anschließend wurde der Step-up-Ansatz angewendet, um den Modellen eine Anzahl von zunehmend strengeren Gleichheitsbeschränkungen hinzuzufügen. Die Messinvarianz wurde nacheinander auf den folgenden drei Ebenen überprüft: konfigurale Messinvarianz, metrische Messinvarianz und skalare Messinvarianz. Latente Mittelwerte wurden verglichen, wenn Hinweise auf eine skalare Invarianz oder partielle skalare Invarianz vorlagen.

Ergebnisse: Die Ergebnisse zeigten, dass das ursprüngliche Ein-Faktor-Modell von PHQ-15 zu keiner der beiden Gruppen passte. Das Bi-Faktor-Modell (ein allgemeiner Faktor

und vier orthogonale symptomspezifische Faktoren) von PHQ-15 zeigte eine bessere Modellanpassung in beiden Gruppen, aber nur die konfigurale und metrische Invarianz konnte zwischen den Gruppen bestätigt werden. Somit konnte die interkulturelle Messinvarianz von PHQ-15 nicht bestätigt werden. Sowohl PHQ-9 als auch GAD-7 hatten in beiden Gruppen dieselbe Faktorstruktur und zeigten eine partielle skalare Invarianz. Der Vergleich der latenten Mittelwerte zeigte keine Unterschiede zwischen dem Ausmaß der Depressions- und Angstsymptome von chinesischen und deutschen Stichproben.

Diskussion: Die vorliegende Studie konnte zeigen, dass PHQ-9 und GAD-7 für die Studierenden in der chinesischen und deutschen Kultur messäquivalent sind, wobei einzelne Items kulturelle Unterschiede aufweisen. Damit ist die Voraussetzung für den Einsatz dieser Fragbögen in der kulturvergleichenden Studie in Bezug auf diese Gruppe gegeben. Der PHQ-15 zeigte keine skalare Messinvarianz und konnte nicht für den interkulturellen Vergleich dieser beiden Gruppen verwendet werden. Eine vollständige skalare Messinvarianz ist im Allgemeinen schwer zu finden, insbesondere in stark kontrastierenden Kulturen. Künftige Studien könnten die Universalität der Skalen über verschiedene Altersgruppen hinweg untersuchen. Weitere Studien über den Einfluss der Kultur auf die Gestaltung des somatischen Bewusstseins sind ebenfalls erforderlich. Die interkulturelle Zusammenarbeit sollte gefördert werden, um die diagnostischen Instrumente zu verbessern, die für kulturspezifische Symptome empfindlicher sind.

4.3 Studie 3. Eine kulturell wertorientierte Online-Intervention zur Verbesserung der Einstellung gegenüber Psychotherapie

Zitation: Zhou, Y., Yang, Y. & Rief, W. (2020). A cultural value-oriented online intervention to improve attitude towards psychotherapy in China and Germany. Manuscript submitted at *Social Science and Medicine*.

Hintergrund: Frühere interkulturelle Studien zeigten, dass die Häufigkeit der Inanspruchnahme professioneller psychologischer Hilfe für Asiaten einschließlich Chinesen deutlich niedriger ist als für Personen aus westlichen Ländern. Dabei spielt die Einstellung gegenüber Psychotherapie eine bedeutende Rolle. Bisher wurden Interventionen durchgeführt, die auf den Abbau von Stigmata gegenüber psychischen Störungen und gegenüber dem Aufsuchen von professioneller psychologischer Hilfe ausgerichtet waren. Dies geschah meistens in den westlichen Ländern. Diese Interventionen können nicht ohne Anpassung an die chinesische Kultur auf diese übertragen werden, denn trotz Gemeinsamkeiten gibt es in den verschiedenen Kulturkreisen unterschiedliche Gründe, die erklären, warum eine Person keine professionelle psychologische Hilfe aufsucht. Es wurde untersucht, ob eine kulturelle wertorientierte Intervention die Einstellung gegenüber Psychotherapie in China und in Deutschland verbessern könnte und wie sich die Effekte dieser Intervention unter Berücksichtigung der kulturellen Aspekte in diesen zwei Ländern unterscheiden.

Methode: Die Online-Intervention wurde mittels Stichproben aus chinesischen Studierenden (n = 196) und deutschen Studierenden (n = 408) durchgeführt. Die Teilnehmer erhielten nach dem Zufallsprinzip entweder eine kollektivistische oder eine individualistische wertorientierte Intervention. Die Einstellung der chinesischen und deutschen Studierenden zur Psychotherapie vor und nach der jeweiligen Intervention wurde innerhalb der interkulturellen Gruppen sowie zwischen ihnen verglichen. Auch der aktuelle Stand der Ausprägung von Kollektivismus und Individualismus bei chinesischen und deutschen Studierenden sowie ihre Einschätzung zur Bedeutung der kulturellen wertorientierten Psychotherapieziele wurden gemessen.

Ergebnisse: Die Einstellung der Studierenden beider Kulturgruppen gegenüber Psychotherapie wurde sowohl durch die kollektivistische als auch durch die individualistische wertorientierte Intervention verbessert. Es zeigte sich jedoch kein Wechselwirkungseffekt für die Art der Intervention × Messzeit × Land ($F (1, 600) = 0{,}255$, $p = 0{,}641$). Vor und nach der Intervention zeigten deutsche Studierende eine positivere Einstellung gegenüber Psychotherapie als chinesische Studierende. Letztere profitierten von beiden Interventionen

stärker als deutsche Studierende. Darüber hinaus wurde festgestellt, dass die chinesischen Studierenden ein hohes Maß an vertikalem Kollektivismus, aber auch ein hohes Maß an horizontalem Kollektivismus und horizontalem Individualismus befürworteten. Deutsche Studierende sprachen sich für ein hohes Maß an horizontalem Kollektivismus, aber auch für ein hohes Maß an horizontalem Individualismus, jedoch weniger für vertikalen Individualismus aus. Darüber hinaus bewerteten die chinesischen Studierenden die kollektivistischen und individualistischen Therapieziele höher als deutsche Studierende.

Diskussion: Die Studie fand eine Koexistenz von Kollektivismus und Individualismus sowohl bei chinesischen als auch bei deutschen Studierenden. Kollektivistisch wertorientierte und individualistisch wertorientierte Interventionen zur Verbesserung der Einstellung gegenüber Psychotherapie zeigten in beiden Kulturen positive Auswirkungen. Die chinesischen Studierenden konnten stärker von beiden kulturorientierten Interventionen profitieren als deutsche Studierende. Allerdings konnten keine Unterschiede zwischen den Effekten der individualistisch und der kollektivistisch orientierten Interventionen in den Gruppen festgestellt werden. Zukünftige Studien könnten sich auf die langfristigen Auswirkungen dieser Interventionen konzentrieren, einen Fragebogen zur Messung von Kollektivismus und Individualismus mit ausreichender interkultureller Messinvarianz entwickeln sowie Interventionen untersuchen, die auf alternativen Theorien kultureller Dimension basieren.

5 Diskussion

5.1 Beantwortung der Fragestellung

Das Ziel der vorliegenden Dissertation war es, die Unterschiede zwischen der Einstellung von Studierenden aus Festlandchina und der Einstellung von Studierenden aus Deutschland gegenüber Psychotherapie zu untersuchen.

In Bezug auf die erste Fragestellung zeigte sich, dass der Fragebogen zur Messung von sozialem Stigma gegenüber Psychotherapie (SSRPH) und das modifizierte Modell des Fragebogens zur Messung der Einstellung gegenüber Psychotherapie (IASMHS) für den interkulturellen Vergleich verwendet werden können. Der Fragebogen zur Messung von Selbst-Stigma (SSOSH) war jedoch nicht nutzbar.

Bezüglich der zweiten Fragestellung lieferte Studie 2 das Ergebnis, dass PHQ-9 und GAD-7 für Studierende in der chinesischen und deutschen Kultur messäquivalent sind und somit die Voraussetzung für ihren Einsatz in der kulturvergleichenden Studie in Bezug auf jene Gruppen gegeben ist. PHQ-15 konnte nicht für den interkulturellen Vergleich der zwei Gruppen verwendet werden.

In Hinblick auf die dritte Fragestellung, wie sich die Einstellung von chinesischen und die Einstellung von deutschen Studierenden gegenüber Psychotherapie unterscheiden, wurde ein neuer Fragebogen in Studie 3 entwickelt, da die in Studie 1 geprüften Fragebögen SSRPH und IASMHS zwar partielle skalare Messinvarianz zeigen, jedoch jeweils nur zwei Items interkulturelle Invarianz aufweisen. Allerdings konnte in Studie 3 mit dem neu entwickelten Fragebogen ebenfalls nur eine partielle skalare Messinvarianz gefunden werden. Es stellte sich heraus, dass deutsche Studierende eine positivere Einstellung gegenüber der Psychotherapie als chinesische Studierende haben, sowohl vor als auch nach einer Intervention zur Verbesserung der Einstellung gegenüber Psychotherapie.

Bezüglich der vierten Fragestellung – ob eine kulturorientierte Intervention die Einstellung gegenüber Psychotherapie in der chinesischen und deutschen Kultur verbessern würde und wie sich die Effekte dieser Intervention unter Berücksichtigung der kulturellen Aspekte in diesen zwei Ländern unterscheiden – zeigte Studie 3, dass die Einstellung der Studierenden beider Kulturgruppen zur Psychotherapie sowohl durch die kollektivistische als auch durch die individualistische wertorientierte Intervention verbessert werden konnte. Jedoch konnten keine Unterschiede zwischen den Effekten der individualistisch und der kollektivistisch orientierten Interventionen in beiden Gruppen festgestellt werden.

5.2 Mögliche Aspekte zur Erklärung der Befunde

Interkulturelle Studien bestehen nicht nur aus dem Feststellen von Mittelwerteunterschieden. Sie müssen auch die Vergleichbarkeit der Messinstrumente gewährleisten und dies stellt sich in der kulturvergleichenden Psychologie als eine Herausforderung dar. Beim größten Teil der Fragebögen, die in den vorliegenden Studien verwendet wurden, konnte nur eine partielle Messinvarianz festgestellt werden. Insbesondere bei Kulturen, die viele Unterschiede aufzeigen, lässt sich eine vollständige Messinvarianz nur selten nachweisen. Dies kann auf Übersetzungsprobleme bei bestimmten Items, kulturelle Voreingenommenheit beim Verständnis bestimmter Konzepte und auf Probleme bei der Methode zur Überprüfung der Messinvarianz zurückzuführen sein. Für Skalen mit einer komplexen Struktur können zukünftige Studien alternative Ansätze zur Prüfung der Messinvarianz in Betracht ziehen. Ein solcher alternativer Ansatz könnte die von Marsh et al. (2009) empfohlene explorative Strukturgleichungsmodellierung sein, mit der die Messinvarianz direkt getestet werden kann und die für Skalen mit einer komplexen Struktur praktikabel ist. Darüber hinaus sind weitere Studien bezüglich des Einflusses der Kultur auf die Gestaltung des somatischen Bewusstseins sowie die Einstellung gegenüber der Psychotherapie erforderlich.

Wie in früheren Studien, in denen festgestellt werden konnte, dass Chinesen, die in westlichen Ländern leben, eine negativere Einstellung gegenüber Psychotherapie haben als Personen aus westlichen Ländern (Mellor et al., 2013; Papadopoulos et al., 2013; Parker et al., 2006; Yang et al., 2013), wurde diese relativ negative Einstellung gegenüber Psychotherapie auch in Stichproben von chinesischen Studierenden aus Festlandchina gefunden, von denen angenommen wurde, dass diese sowohl traditionelle als auch westliche Werte vertreten (Kolstad & Gjesvik, 2014). Im Vergleich zu Personen aus westlichen Ländern zeigen Chinesen aus Festlandchina bei der Inanspruchnahme einer westlichen Psychotherapie eine höhere Anzahl von kulturellen sowie nichtkulturellen Hindernisse auf (Liu & Leung, 2010). Die kurze Geschichte der Entwicklung der Psychotherapie in China, der verbesserungswürdige Entwicklungsstand chinesischer psychiatrischer Krankenversorgung (Zhao, 2017) sowie die weiterhin bestehende Skepsis gegenüber Psychotherapie und gegenüber der Qualifikation von Psychotherapeuten stellen nichtkulturelle Hindernisse dar. In Bezug auf kulturelle Barrieren werden asiatische Werte wie die emotionale Selbstbeherrschung und Vermeidung von Schamgefühlen mit negativen Einstellungen gegenüber der Inanspruchnahme von Psychotherapie in Verbindung gebracht (Kim, 2007;

Kim & Omizo, 2003). Es besteht kein Zweifel daran, dass die Einstellung gegenüber Psychotherapie und deren Inanspruchnahme in Bezug auf Chinesen deutlich verbessert werden können.

In der vorliegenden Arbeit wurden keine Unterschiede zwischen kollektivistisch und individualistisch orientierten Interventionen in den jeweiligen kulturellen Gruppen festgestellt, obwohl beide Interventionen die Einstellung gegenüber Psychotherapie in beiden Gruppen verbessern konnten. Dies könnte darauf zurückzuführen sein, dass es keinen wesentlichen Unterschied zwischen chinesischen und deutschen Studierenden hinsichtlich kultureller Tendenzen zum Kollektivismus bzw. Individualismus gibt. Die Hypothese und Intervention der vorliegenden Studie basieren auf einer (Individualismus und Kollektivismus) von sechs der von Hofstede entwickelten einflussreichen kulturellen Dimensionen (Hofstede, 1980). Es ist zu vermuten, dass in den Ländern, v. a. in China, durch die starke wirtschaftliche Entwicklung in den letzten 20 Jahren eine soziokulturelle Veränderung stattgefunden hat und die Datenbank von Hofstedes Studien, die zwischen 1990 und 2002 angelegt wurde (Hofstede, Hofstede & Minkov, 2010), die aktuelle chinesische sowie deutsche Kultur nicht mehr erfassen kann. Alternative Ansätze könnten die aktuellen kulturellen Werten in den jeweiligen Ländern aufzeichnen, z. B. die kulturellen Dimensionen gemäß dem World Values Survey (Inglehart & Welzel, 2010), die von 1984 bis 2020 wiederholt Längsschnittmessungen der Entwicklung von kulturellen Werten in 48 Ländern inklusive China und Deutschland durchgeführt haben (World Values Survey, 2020). Zukünftige Studien könnten den Effekt der auf diesen Kulturdimensionen basierenden Interventionen untersuchen.

5.3 Einschränkungen

Die vorliegende Arbeit hat einige Einschränkungen, die beachtet werden sollten. Erstens war die Stichprobe auf Studierende aus China und Deutschland beschränkt, sodass die Ergebnisse nicht auf die allgemeine Bevölkerung jener Kulturen bezogen werden können. Zweitens könnte die Rekrutierung von freiwilligen Teilnehmenden aus dem Studierendenkreis zu einer Selektionsverzerrung geführt haben, da die Personen, die sich für das Thema der Inanspruchnahme von professioneller psychologischer Hilfe interessierten oder Erfahrung mit Psychotherapie hatten, mit höherer Wahrscheinlichkeit teilnahmen. Die Rekrutierung der Teilnehmer erfolgte ohne ein systematisches Auswahlverfahren. Daher könnte die Selbstauswahl der Teilnehmer, die ein typischer Nachteil von Online-Umfragen ist, der Repräsentativität der Stichprobe abträglich sein. Ferner blieb unklar, ob die Interventionen ausreichend kulturspezifisch für die jeweiligen Kulturgruppen waren, obwohl versucht wurde,

die Interventionen unter Berücksichtigung kultureller Werte zu gestalten. Es ist möglich, dass die kulturellen Kernunterschiede zwischen China und Deutschland in anderen kulturellen Dimensionen zum Ausdruck kommen als in einer Unterscheidung zwischen Kollektivismus und Individualismus. Des Weiteren wurde keine Folgestudie zur Untersuchung der Effekte der Interventionen durchgeführt. Somit sind die langfristigen Auswirkungen der Interventionen noch unbekannt.

5.4 Fazit

Die vorliegende Dissertation untersucht die Unterschiede zwischen der Einstellung von Studierenden aus Festlandchina und der Einstellung von Studierenden aus Deutschland gegenüber Psychotherapie. Mittels der vorliegenden Dissertation wurde die Voraussetzung, d. h. die Messinvarianz, für die Anwendung von SSRPH, SSOSH, IASMHS, PHQ-15, PHQ-9 und GAD-7 für interkulturelle Vergleiche, in großen Stichproben in China und Deutschland überprüft, was in bisherigen Studien vernachlässigt wurde. Die Ergebnisse legen nahe, dass die Konstrukte eines Forschungsgegenstandes in ihrem Ausdruck in unterschiedlichen Kulturen variieren können und die Messäquivalenz des Messinstruments sichergestellt werden sollte. Es wurde festgestellt, dass chinesische Studierende aus Festlandchina eine negativere Einstellung gegenüber Psychotherapie im Vergleich zu deutschen Studierenden haben und ihre Einstellung gegenüber Psychotherapie deutlich verbessert werden könnte. Außerdem bietet die vorliegende Studie eine neue Perspektive für die Wirkung einer kulturell wertorientierten Online-Intervention zur Verbesserung der Einstellung gegenüber Psychotherapie in einem interkulturellen Kontext. Eine kulturell wertorientierte Intervention stellt eine bedeutende Ergänzung zu den bisherigen Maßnahmen zur Verbesserung der Einstellung gegenüber Psychotherapie dar und könnte in zukünftigen Studien erweitert werden.

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7 Anhang

7.1 Anhang 1. Studie 1.

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Cross-Cultural Measurement Invariance of Scales Assessing Stigma and Attitude to Seeking Professional Psychological Help

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There has been a growing interest in research on stigma and attitude toward psychotherapy, and these variables are expected to show cross-cultural variations. The Stigma Scale for Receiving Psychological Help (SSRPH), the Self-Stigma of Seeking Help (SSOSH) and the Inventory of Attitudes to Seeking Mental Health Services (IASMHS) are widely used and this study examined their measurement invariance as this is a prerequisite for use in cross-cultural studies. Data were collected online from groups of Chinese students in China (n = 413) and German students in Germany (n = 416). Confirmatory factor analyses in single samples and measurement invariance testing in a multi-group framework were conducted to test the cross-group equivalence. Findings demonstrate that the SSRPH and the modified model of IASMHS had partial scalar measurement invariance, but the SSOSH showed cultural variance in factor structure. Comparisons of latent means indicated no differences between the two groups with respect to the social stigma attached to professional psychological help, but a higher psychological openness of Chinese students toward help-seeking. Findings are discussed from intercultural and methodological perspectives. In the future, intercultural cooperation should be promoted in order to develop a cross-culturally valid concept of stigma against psychological help that could be used as the basis for intercultural comparison and developing interventions to reduce stigma.

Keywords: cross-culture, measurement invariance, stigma, attitudes, psychological help

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INTRODUCTION

Psychological interventions are now used as first-line treatments for many mental disorders, but access to and take up of psychotherapy strongly depend on stigma and attitudes to these treatments. Studies have shown that Asians, including Chinese, have more negative attitudes to help-seeking (Parker et al., 2006; Chen and Mak, 2008; Jimenez et al., 2012) and use mental health services less frequently than Westerners (Kim, 2007; Leong et al., 2007; Wang et al., 2007). Most of this research was based on samples of Chinese people living in Western countries (Parker et al., 2006; Mellor et al., 2013; Papadopoulos et al., 2013; Yang et al., 2013); only a few studies have directly investigated how attitude to psychotherapy differs between mainland Chinese and Westerners (Chen and Mak, 2008). Although modern psychotherapy has a shorter history in China than in

Western countries such as Germany, it has been rapidly expanding for the past 30 years (Zhao, 2017). Since China adopted policies of reform and greater openness in 1978, not only has it undergone rapid economic development, urban Chinese have been influenced by Western science, lifestyle, and individualism (Kolstad and Gjesvik, 2014). It has been assumed that traditional and Western values coexist in urban areas in China such that urban and educated Chinese are now likely to have similar perceptions of mental illnesses to Westerners and cope with them in a similar way (Kolstad and Gjesvik, 2014). On the other hand, the perception of the stigma toward mental illness and the public's willingness to seeking professional psychological help have improved in western countries such as Germany over the last two decades (Angermeyer et al., 2013, 2014). However, stigma and negative attitudes toward psychotherapy are still widespread. In a study conducted by Albani et al. (2013), about a third of the respondents could not even imagine having to undergo psychotherapy. Furthermore, 7.9% expressed they would prefer avoiding any contact with a neighbor if he told them that he is currently undergoing psychotherapy (Albani et al., 2013). However, an in-depth cross-cultural examination of the differences pertaining to the stigma and attitudes toward professional psychological help is overdue.

Investigating potential differences on these measures is indicated, because the role of psychological interventions between Chinese and German cultures is very different. While psychotherapy is established as a typical treatment in Germany for 100 years, its history in China is much shorter, and influenced by other developments of the Chinese health care system and Chinese traditions. So, the first step in intercultural comparisons is to examine whether the assessment tools are cross-culturally valid (Miller and Sheu, 2008). Scales are considered comparable across cultures when the measurement relationship between the observed indicators and their underlying latent variables is the same in different cultural groups (Vandenberg and Lance, 2000). Country differences in scale means can result from differences in understanding of certain concepts, translation problems or other measurement errors and may mean that a scale fails to capture interesting substantial differences accurately.

There are two approaches of measurement equivalence analysis: differential item functioning (DIF) and confirmatory factory analysis (CFA). Although these two approaches have the similar concepts and procedures (Meade and Lautenschlager, 2004; Stark et al., 2006), we preferred the CFA because that DIF analysis for multidimensional models are less established and it is more appropriate for multiple choice test data (Tay et al., 2015). CFA offers a robust statistical framework for testing measurement equivalence, also called measurement invariance.

Miller and Sheu (2008) suggested three most frequently assessed levels of measurement invariance: configural, metric, and scalar invariance. The aforementioned levels of invariance are inherent in a hierarchical structure; thus, they build on one another. Configural invariance is present when the number of factors and the pattern of the factor loadings between the latent variables and indicators in the compared groups are similar. Subsequently, metric invariance is present when the factor loadings of items are invariant across groups. The strict factorial invariance/scalar invariance is present when both the factor loadings and intercepts are invariant across groups. In terms of content, this level of invariance signifies that the observed feature can be mapped across the groups on a common scale, for instance, by having a common zero point. Evidence for scalar invariance or at least partial scalar invariance[1] is a prerequisite for the comparison of latent mean values obtained from sub-samples (Bryne et al., 1989; Brown, 2006). Non-invariance can provide important information about the way different groups interpret the same construct (Putnick and Bornstein, 2016).

Measurement equivalence should be examined before a scale is used for cross-culture comparisons. Nevertheless, few studies (Vogel et al., 2013a) have examined the cross-cultural measurement invariance of questionnaires measuring stigma and attitudes to psychotherapy. To address this limitation, we examined the cross-cultural validity of stigma and attitude to psychotherapy scales in China and Germany.

Corrigan and Watson (2002) distinguished two types of stigma, self-stigma, and public stigma. We opted to assess the scales most commonly used to measure these types of stigma in empirical research.

Public stigma is defined as a set of negative attitudes and beliefs that motivate fear, rejection, avoidance, and discrimination against people with mental illness (Corrigan and Watson, 2002). A longitudinal study (Vogel et al., 2013b) found that public stigma predicts self-stigma (defined in the next paragraph) 3 months later. Public stigma is mostly assessed using the one-dimensional Stigma Scale for Receiving Psychological Help (SSRPH; Komiya et al., 2000).

Self-stigma consists of the application of stereotypes and prejudices against people with mental illness to oneself and the resulting self-discrimination (Corrigan and Watson, 2002). It results in low-esteem, low self-efficacy, and failure to take advantage of health care opportunities (Corrigan and Watson, 2002). The hypothesis that self-stigma is associated with a negative attitude to seeking help for mental illness has been confirmed in diverse samples including students (Cheng et al., 2015, 2018; Jennings et al., 2015; McDermott et al., 2017; Mullen and Crowe, 2017). The Self-Stigma of Seeking Help Scale (SSOSH) assesses perceptions of the loss of self-esteem the respondent would feel if he or she decided to seek professional psychological help (Vogel et al., 2006). A brief report by Vogel et al. (2013a) provided evidence of the measurement equivalence of the SSOSH across groups collected from Taiwan and areas in England, Greece, Israel, Turkey, and the United States.

Attitude toward seeking professional help for mental illnesses is related to interpersonal processes and personality components involved in general help-seeking when affected by mental illnesses (Fischer and Turner, 1970). People may be deterred from seeking help for a mental health problem by fear of being stigmatized, unwillingness or inability to disclose feelings and experiences, personal preconceptions and beliefs about

[1]Partial measurement invariance is declared when at least two items per latent variable (i.e., factor loadings, factor intercepts) are found to be invariant (Muthén and Christoffersson, 1981).

professional treatment (Fischer and Turner, 1970). Attitude to seeking professional help is often assessed using the 24-item Inventory of Attitudes to Seeking Mental Health Services (IASMHS; Mackenzie et al., 2004), a revised short version of Fischer and Turner's (1970) Attitudes to Seeking Professional Psychological Help scale (ATSPPH). The IASMHS examines three aspects of attitude to help-seeking: psychological openness, help-seeking propensity, and indifference to stigma. Fang et al. (2011) showed that the help-seeking construct as operationalized by the short form of the ATSPPH (ATSPPH-SF) may not be valid for the Chinese population, because CFA failed to confirm that Chinese response data fitted the original one-factor model of the English-language ATSPPH-SF. Despite this finding, the psychometric properties of the original three-factor model of the Chinese version of the IASMHS and the cross-cultural measurement invariance of the IASMHS have still not been assessed.

This study was conducted to investigate the measurement invariance of the SSRPH, SSOSH, and IASMHS between groups of German students in Germany and Chinese students in China. Investigating students has the advantage of offering comparability in educational status and age combined with differences in cultural background. Previous studies report evidence of measurement equivalence between western and non-western countries for self-stigma assessed with SSOSH (Vogel et al., 2013a), and problems replicating the factor structure of the Attitudes to Seeking Professional Psychological Help scale (ATSPPH, Fischer and Turner, 1970) which is related to IASMHS (Fang et al., 2011). Therefore, we expected that measurement invariance of the SSRPH and the SSOSH between the two cultures is given, but the measurement invariance of the IASMHS may be problematical. We also assessed differences in latent means for public stigma, self-stigma, and attitude to seeking professional mental help where scalar measurement invariance across groups was demonstrated. Investigating the cross-cultural equivalence of the SSRPH, SSOSH, and IASMHS is a prerequisite for cross-cultural comparisons and thus enhances the validity of conclusions from such research. Testing the measurement equivalence of the three scales in Mainland China and Germany was so far not conducted.

MATERIALS AND METHODS

Participants

Data collection in Germany and China started in August of 2016 and lasted 6 months. German students of the University of Marburg (total number of students: 26,355) were contacted via the university email list, and they were incentivised to participate by means of the promise that the participants would be entered in a draw for vouchers worth 20 Euros. Eventually, 456 German students took part in this study. After applying the exclusion criteria (without a migration background and confirming a minimum processing time on the scales of 10 min), the number of German students whose data was viable for analysis decreased to 416. Since the students from the University of Zhengzhou do not communicate via university email, the students' sample in China was recruited on WeChat, a popular social media platform used by most Chinese students. The questionnaire was posted in the WeChat groups of various affiliated faculties (e.g., Economics and Electronic Information Engineering). Moreover, the students in these groups were invited to send the link to the questionnaire to students from other faculties. In total, 9,156 students were invited to participate in this study, 566 of whom participated in it. According to the same exclusion criteria as in the German sample, the number of Chinese students whose data were usable for analysis decreased to 413. These participants did not receive any financial reward. The demographic characteristics of the two groups are summarized in **Table 1**.[2] The study was approved by the Ethics Committee of the Faculty of Psychology of the University of Marburg.

Assessment Instruments

Stigma Scale for Receiving Psychological Help (SSRPH)

The social stigma of receiving psychological help was assessed with the 5-item SSRPH (Komiya et al., 2000). Participants responded to statements such as 'Seeing a psychologist for emotional or interpersonal problems carries social stigma' using a 4-point Likert-scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). Total score could range from 0 to 15. The English version of SSRPH showed an acceptable level of internal consistency (Cronbach's alpha = 0.72) and construct validity and had a one-factor structure in a sample of college students (Komiya et al., 2000). Similar internal consistency (Cronbach's alpha = 0.71) was reported in a sample of Asian American students (Miville and Constantine, 2007). Pinto et al. (2015) examined the construct validity of the SSRPH with a sample of adolescent girls in the United States and found that the confirmatory factor analysis revealed excellent model fit for a one factor model. No previous study has examined the cross-cultural measurement invariance of the SSRPH.

Self-Stigma of Seeking Help (SSOSH)

Self-stigma of receiving psychological help was assessed with the SSOSH (Vogel et al., 2006), which consists of 10 items, such as 'I would feel inadequate if I went to a therapist for psychological help,' and 'I would feel worse about myself if I could not solve my own problems.' Items were rated from 1 (*strongly disagree*) to 5 (*strongly agree*). Total score could range from 10 to 50. In previous research by Vogel et al. (2006) in a sample of college students in the United States, the SSOSH had good reliability ($\alpha = 0.91$) and construct validity and a one-factor structure. Vogel et al. (2006) also reported criterion validity and predictive validity of SSOSH. SSOSH score can predict attitude to professional help and intention to seek professional

[2]Since the demographic data of the two samples was significantly different, propensity score matching (by gender and age) was performed to exclude the test effect of gender and age for the purpose of data analysis. However, the results did not differ from those obtained prior to performing the propensity score matching test. The results of the comparison between the underlying structure and the invariant items of the scales remained unchanged. Therefore, we presented the results without conducting propensity score matching, owing to the large sample size.

TABLE 1 | Demographic characteristics of participants.

Variables	German students (n = 416)	Chinese students (n = 413)	p-value	Effect size
Sex: female n (%)	294 (70.7%)	250 (60.5%)	0.001	$\varphi = 0.15$
Age in years ($M \pm SD$; range)	23.85 ± 4.66; 18–58	20.79 ± 2.57; 17–39	$p < 0.001$	Cohen's $d = 0.81$
Highest academic degree			$p < 0.001$	Cramér's $V = 0.78$
Bachelor (%)	183 (44%)	391 (94.7%)		
Master (%)	83 (20%)	7 (1.7%)		
Ph.D. (%)	17 (4.1%)	4 (1.0%)		
Other (%)	137 (32%)	11 (2.7%)		

The comparisons of sex and academic degree were calculated using Chi-squared test. The comparison of the age was calculated using T-test.

psychological help (Vogel et al., 2006). In a German general population sample, the SSOSH demonstrated good reliability (Cronbach's alpha = 0.84), (Apolinário-Hagen et al., 2016). In middle school and high school children from Beijing, China, the SSOSH showed an internal consistency of $a = 0.75$ (Chen et al., 2014). Measurement invariance of the SSOSH across cultures has barely been studied. Vogel et al. (2013a) ascertained that the one-factor model of SSOSH showed measurement invariance across samples collected from six areas of the world including the United States and Taiwan.

Inventory of Attitudes to Seeking Mental Health Services (IASMHS)

Attitude to seeking professional psychological service was assessed using the 24-item IASMHS (Mackenzie et al., 2004), which consists of three internally consistent factors (Cronbach's alpha = 0.87), each measured with eight items: psychological openness (Cronbach's alpha = 0.82; sample item: 'There are certain problems which should not be discussed outside of one's immediate family'), help-seeking propensity (Cronbach's alpha = 0.76; sample item: 'If I believed I was having a mental breakdown, my first inclination would be to get professional attention.') and indifference to stigma (Cronbach's alpha = 0.79; sample item: 'I would feel uneasy going to a professional because of what some people would think.'). The internal consistency of the full-scale IASMHS was 0.87. Psychological openness is an openness to acknowledging psychological problems and the possibility of seeking professional help for them. Help-seeking propensity reflects the extent to which individuals consider themselves willing and able to seek professional psychological help. Indifference to stigma captures concern about what important others would think if they were to find out that one was seeking professional psychological help. Participants responded on a five-point Likert scale ranging from 0 (*disagree*) to 4 (*agree*). Sum scores for the subscales can range from 0 to 32. The English IASMHS had high reliability and validity in previous research (Mackenzie et al., 2004). The Chinese version demonstrated satisfactory reliability (Cronbach's alpha = 0.77) in a sample of Macao citizens (Found, 2016) and similar reliability in a sample of college students in Taiwan (Loo et al., 2011). No previous study has examined the cross-cultural measurement invariance of the IASMHS. Fang et al. (2011) investigated the psychometric properties of the ATSPPH-SF, a short form of the IASMHS, with a sample of college students in Mainland China. By performing confirmatory factor analysis, the researcher determined that the help-seeking construct, as operationalized by the ATSPPH-SF, might not be valid for Chinese students.

Translation

The German version of IASMHS was translated and validated by Kessler et al. (2015) from the original English-language scale (Mackenzie et al., 2004). German and Chinese versions of SSRPH, SSOSH, and a Chinese version of the IASMHS were constructed using the customary translation-back-translation method recommended by Brislin (1970). The English version of the scales was initially translated to Chinese and German. Afterwards, the Chinese and German versions were translated back into English. The arising Semantic differences were discussed, and the final versions of the translation were agreed upon. The translators were native Chinese and German speakers who had excellent English reading and writing skills. The translated Chinese and German versions we used for the current study have been included in the part of **Supplementary Tables S5**, **S6**.

Statistical Analyses

Only data from students who had been born and raised in the country concerned were included in the groups of Chinese students in China and German students in Germany. Measurement invariance analysis was conducted according to the procedure described by Vandenberg and Lance (2000), van de Schoot et al. (2012), and used by Schulte et al. (2013), which provided multi-group comparisons in the context of CFA. CFAs were conducted with the software program M*plus* v7.4 (Muthén and Muthén, 2015) because of its flexibility (van de Schoot et al., 2012).

First, we examined separate measurement models for each group using confirmatory factor analyses (CFA). Decisions about goodness of model fit were based on χ^2 difference tests, as recommended by Hu and Bentler (1999). Because the χ^2 difference test is sensitive to sample size, we also used several other common indices to evaluate goodness of fit (Weiber and Mühlhaus, 2015: $\chi^2/df \leq 3$, CFI ≥ 0.95, RMSEA ≤ 0.08, SRMR ≤ 0.08; Ford et al., 1986: factor loadings of items should be greater than 0.40). In case of model misspecifications, item difficulty and item discrimination were also examined (item difficulty should be between 20 and 80; Lienert and Raatz, 1998: item discrimination should be more than 0.30).

Examination of measurement invariance was be repeated by excluding items with sub-optimal item discrimination and item difficulty.

Second, the step-up approach was used to add a series of increasingly stringent equality constraints to the models (Vandenberg and Lance, 2000; Brown, 2006). Multiple group comparisons were used to test the configural invariance of the baseline model. No equality constraints were imposed at this stage. We investigated whether the number of the factor and general loading pattern were the same across groups. Next, factor loadings of indicators were constrained to be equal across groups in order to examine metric invariance. To examine the next highest form of measurement invariance, scalar invariance, intercepts of indicators were also constrained to be equal across groups. Gradual equality constraining of the parameters across groups will lead to a decrease in terms of the model fit. In respective of whether a model is accepted or rejected, the decision was based on the χ^2 difference tests (Hu and Bentler, 1999). Since the χ^2 difference tests were sensitive to the sample size, we have additionally determined that the difference in CFI between the base model and the constrained model should not be more than 0.01 (Cheung and Rensvold, 2002). Furthermore, partial invariance was examined in case full measurement invariance could not be established (Bryne et al., 1989). By means of modification indices, a modified model for checking partial invariance by releasing the equality constraints in the descending order for misspecified items, was subsequently examined. To establish partial measurement invariance, at least two loadings or intercepts should be equal across groups (Bryne et al., 1989).

Third, latent means were compared if there was evidence of scalar invariance or partial scalar invariance. The latent mean of one group was fixed to zero, and the latent mean of the other group was allowed to freely estimate. Then the differences between the latent means was examined.

RESULTS

Descriptive Statistics

Table 2 shows the internal consistencies, means, standard deviations, skewness and kurtosis of the sum scores for each scale in each group. Based on Kline's (2010) criteria (skewness $\leq$ 3, kurtosis $\leq$ 8) we concluded that the data were normally distributed. In the sample of German students, the internal consistency was good ($\alpha > 0.70$) for all scales. In the Chinese group, SSRPH ($\alpha = 0.67$) and the psychological openness subscale of the IASMHS ($\alpha = 0.62$) showed less than good internal consistency. Item 5 in the German version of the SSOSH, 'My view of myself would not change just because I made the choice to see a therapist,' showed an unexpectedly small correlation (<0.10) with other items of the scale. Items 6 and 18 of the IASMHS demonstrated unexpectedly small correlations (<0.10) with most of the other items of the scale in the German group. In the group of Chinese students, all IASMHS items showed small correlations (<0.10) with at least five other items. Despite these findings, we used CFA to test the original models in both groups. In order to examine the characteristic of the items in more detail, we also checked item difficulty and item discrimination of the three scales (**Supplementary Tables S1**, **S2**).

Examining the Measurement Invariance of the SSRPH

Examination of the Measurement Model

We started by using CFA to examine the fit of a one-factor model of the SSRPH in the two groups separately (**Table 3**). The unconstrained factor loadings and intercepts were presented in **Supplementary Table S3**. All the loadings were above 0.40. The one-factor of the SSRPH had a good fit (CFI, SRMR, and RMSEA) in both groups, except in the case of the RMSEA in data from Chinese students (RMSEA = 0.086; 90% CI [0.050-0.127]). Modification indices showed that the model fit in this group could be improved by allowing correlation of the error terms for items 1 and 5. To promote comparability across groups, the correlated error terms were not allowed in the model testing measurement invariance.

Measurement Invariance Between Cultures

The results of multi-group tests of measurement invariance of the SSRPH are presented in **Table 3**. Fit indices of the baseline model of the SSRPH were in line with configural measurement invariance ($\chi^2 = 38.171$, $df = 10$, $p < 0.001$; CFI = 0.975; RMSEA = 0.082, 90% CI [0.056–0.111]; SRMR = 0.028). In the model imposing metric measurement invariance, item loadings were constrained to be equal between groups. A comparison of this model with the baseline model using an χ^2 difference test showed that fit of the more restrictive model with equal factor loadings is worse than the fit of the baseline model ($\Delta\chi^2 = 14.941$, df = 5, $p < 0.001$). Because the χ^2 difference test is sensitive to sample size, and the other common indices (CFI = 0.967; RMSEA = 0.078, 90% CI [0.056–0.102]); SRMR = 0.061; ΔCFI = 0.008) were good, we could assume that the fit of metric invariance was acceptable. To examine scalar invariance, item loadings were constrained to be equal between groups. The fit of the model testing scalar measurement invariance was poor ($\chi^2 = 274.232$, $df = 19$, $p < 0.001$; CFI = 0.777; RMSEA = 0.180, 90% CI [0.161–0.199]; SRMR = 0.148), and it provided a worse fit than the partial metric measurement invariance model (ΔCFI = 0.190). Modification indices showed that some indicators intercepts were not invariant across groups. Partial scalar measurement invariance was established by allowing the intercepts of items 1, 3, and 5 to vary in the descending order ($\chi^2 = 53.243$, $df = 16$, $p < 0.001$; CFI = 0.967; RMSEA = 0.075, 90% CI [0.053–0.098]; SRMR = 0.062; ΔCFI = 0.000).

Latent Mean Comparisons

Because the SSRPH showed partial scalar invariance, group comparison of latent means was possible. In multigroup comparisons of latent mean differences, the group of German students was used as the reference group with a latent mean

TABLE 2 | Means, standard deviations, skewness, kurtosis, and internal consistency across scales and groups.

	German students					Chinese students				
Scale	***M***	***SD***	**Skew**	**Kurt**	**α**	***M***	***SD***	**Skew**	**Kurt**	**α**
SSOSH	11.65	4.41	0.30	−0.48	0.80	7.86	3.01	1.12	0.78	0.82
SSRPH	25.19	7.35	0.27	−0.70	0.81	24.94	4.93	−0.35	0.00	0.67
IASMHS-I	18.83	5.45	0.41	−0.17	0.70	25.55	4.12	−0.81	2.20	0.62
IASMHS-II	18.59	6.01	0.46	0.12	0.81	21.72	3.77	0.89	3.67	0.70
IASMHS-III	18.08	6.75	0.43	−0.49	0.85	18.84	4.77	0.04	−0.18	0.80

SSRPH, Stigma Scale for Receiving Psychological Help; SSOSH, Self-stigma of Seeking Help; IASMHS-I, Psychological Openness; IASMHS-II, Help-Seeking Propensity; IASMHS - III, Indifference to Stigma; Skew, Skewness; Kurt, Kurtosis.

TABLE 3 | Summary of fit indices from comparative factor analysis (CFA) and invariance analyses between groups for the SSRPH.

Model-SSRPH	**χ^2 (df)**	**CFI**	**RMSEA [90% CI]**	**SRMR**	**ΔCFI**	**$\Delta\chi^2$ (df)**
Single group CFA - original one factor model						
German students	17.726 (5)	0.982	0.078 [0.041, 0.119]	0.026		
Chinese students	20.445 (5)	0.964	0.086 [0.050, 0.127]	0.029		
Multiple group CFA models						
Model A: Configural invariance	38.171 (10)	0.975	0.082 [0.056, 0.111]	0.028		
Model B: Metric invariance	53.112 (15)	0.967	0.078 [0.056, 0.102]	0.061	0.008	14.941 (5)
Model C: Scalar invariance	274.232 (19)	0.777	0.180 [0.161, 0.199]	0.148	0.190	221.12 (4)
τ_1 free	119.367 (18)	0.911	0.117 [0.097, 0.137]	0.085	0.056	66.255 (3)
τ_1, τ_3 free	69.321 (17)	0.954	0.086 [0.066, 0.108]	0.066	0.013	16.209 (2)
τ_1, τ_3, τ_5 free	53.243 (16)	0.967	0.075 [0.053, 0.098]	0.062	0.000	0.131 (1)

SSRPH, Social-Stigma Scale for Receiving Psychological Help; τ_1, 'Seeing a psychologist for emotional or interpersonal problems carries social stigma'; τ_3, 'People will see a person in a less favorable way if they come to know that he/she has seen a psychologist'; τ_5, 'People tend to like those who are receiving professional psychological help less'. All χ^2 tests and $\Delta\chi^2$ were significant, $p < 0.001$.

fixed to zero. Chinese students had lower SSRPH scores (mean difference = 0.129) than German students, indicating that the Chinese students attached a fewer social stigma to seeking professional psychological help, but the mean difference was not significant ($p > 0.05$).

Examining the Measurement Invariance of the SSOSH

The corresponding CFA showed that the measurement model of the SSOSH had a good fit (**Table 4**) only for German students ($\chi^2 = 76.407$, $df = 27$, $p < 0.001$; CFI = 0.963; RMSEA = 0.066, 90% CI [0.049, 0.084]; SRMR = 0.034; Chinese students: $\chi^2 = 316.601$, $df = 27$, $p < 0.001$; CFI = 0.660; RMSEA = 0.161, 90% CI [0.145–0.177]; SRMR = 0.121). To improve the baseline model for the Chinese group, both item discrimination and item difficulty were examined. To elaborate, item 2 ("My self-confidence would NOT be threatened if I sought professional help"), 4 ("My self-esteem would increase if I talked to a therapist"), 5 ("My view of myself would not change just because I made the choice to see a therapist"), and 10 ("I would feel worse about myself if I could not solve my own problems") showed low item discrimination (<0.30, **Supplementary Table S1**), which indicated that the value of these items corresponded poor to the scale. Subsequently, the examination of measurement invariance was repeated by excluding these items (**Table 4**),

TABLE 4 | Summary of fit indices from comparative factor analysis (CFA) and invariance analyses across groups for the SSOSH.

Model-SSOSH	**χ^2 (df)**	**CFI**	**RMSEA [90% CI]**	**SRMR**	**ΔCFI**	**$\Delta\chi^2$ (df)**
Single group CFA - original one-factor model						
German students	76.407 (27)	0.963	0.066 [0.049, 0.084]	0.034		
Chinese students	316.601 (27)	0.660	0.161 [0.145, 0.177]	0.121		
Single group CFA – one-factor model without item 2, 4, 5, 10						
German students	38.980 (9)	0.965	0.089 [0.062, 0.119]	0.031	0.002	37.427 (18), $p < 0.005$
Chinese students	120.070 (9)	0.826	0.173 [0.146, 0.201]	0.084	0.162	196.531 (18), $p < 0.001$

SSOSH, Self-Stigma of Seeking Help Scale; item 2, 'My self-confidence would NOT be threatened if I sought professional help'; item 4, 'My self-esteem would increase if I talked to a therapist'; item 5, 'My view of myself would not change just because I made the choice to see a therapist'; item 10, 'I would feel worse about myself if I could not solve my own problems.' All χ^2 tests were significant, $p < 0.001$.

and the measurement model of the SSOSH in the Chinese group was improved [$\Delta\chi^2$ (df) = 196.531 (18), $p < 0.001$; ΔCFI = 0.162]. However, the general model fit was still unacceptable (CFI = 0.826; RMSEA = 0.173, 90% CI [0.146–0.201]; SRMR = 0.084). This suggests that the SSOSH, which was developed to measure a Western concept, cannot measure an identical "self-stigma of seeking professional psychological help" construct in Chinese students. Hence, no baseline model for the analysis of measurement invariance between the groups could be established, and the comparison of the latent means could not be conducted.

Examining the Measurement Invariance of the IASMHS

Examination of the Measurement Model

Separate CFAs of the IASMHS (**Table 5**) showed that the original three-factor model had an acceptable RMSEA and SRMR in both groups (Chinese group: RMSEA = 0.063, 90% CI [0.057–0.069]; SRMR = 0.070; German group: RMSEA = 0.054, 90% CI [0.048–0.060]; SRMR = 0.054), but a poor general measurement model fit in both groups (Chinese groups: χ^2 = 659.900, df = 249, $p < 0.001$; CFI = 0.781; German group: χ^2 = 548.504, df = 249, $p < 0.001$; CFI = 0.898). After the examination of item discrimination and item difficulty, the total items of factor 2 ("help-seeking propensity") of the IASMHS, the item 1, 4, 7, 12, 14, 18 of factor 1 ("psychological openness"), and the item 3 of the factor 3 ("indifference to stigma") were excluded because of the low item discrimination (<0.30, **Supplementary Table S2**). The measurement invariance of a two-factor model (with 2 items of factor "psychological openness," and 7 items of factor "indifference to stigma") of IASMHS was then examined. The unconstrained factor loadings and intercepts were presented in **Supplementary Table S4**. All the loadings were above 0.40, except that the factor loading of item 23 in the Chinese sample was 0.39. The measurement model fit of both groups were obviously improved (Chinese group: CFI = 975; RMSEA = 0.045, 90% CI [0.024–0.065]; SRMR = 0.034; ΔCFI = 0.036; German group: CFI = 0.936; SRMR = 0.044; ΔCFI = 0.038), except that the RMSEA (0.087, 90% CI [0.070–0.104]) in the German group exceeded slightly 0.080. Baseline model for analysis of measurement invariance between the groups could be established.

Measurement Invariance Between Cultures

The results of multi-group tests of measurement invariance of the two-factor model of the SSRPH are presented in **Table 5**. The configural model showed a good general model fit (CFI = 0.952; RMSEA = 0.069, 90% CI [0.057, 0.082]), implying that the configural invariance could be confirmed. Then the factor loadings were constrained to be equal, and this leaded to a decrease in the general model fit, as ΔCFI exceeded 0.01 and SRMR exceeded 0.08. Modification indices indicated invariance in the item loadings. A modified model for checking partial metric invariance by releasing the equality constraints in descending order for items 20, 23, and 16 provided good fit (CFI = 0.944; RMSEA = 0.071, 90% CI [0.059–0.083]; SRMR = 0.079; ΔCFI = 0.008). Next, the factor intercepts were constrained to be equal, and the global scalar measurement invariance model had poor fit. Modification indices showed that the intercepts of items were invariant across the groups. Partial scalar measurement invariance was acceptable after allowing the

TABLE 5 | Summary of fit indices from comparative factor analysis (CFA) and invariance analyses across groups for the IASMHS.

Model-IASMHS	χ^2 (df)	CFI	RMSEA [90% CI]	SRMR	ΔCFI	$\Delta\chi^2$ (df)
Single group CFA - original three-factor model						
German students	548.504 (249)	0.898	0.054 [0.048, 0.060]	0.054		
Chinese students	659.900 (249)	0.781	0.063 [0.057, 0.069]	0.070		
Single group CFA - two-factor model: factor 1 (openness): item 9, 21; factor 2 (stigma): item 6, 11, 16, 17, 20, 23, 24						
German students	107.109 (26)	0.936	0.087 [0.070, 0.104]	0.044	0.038	441.395 (223)
Chinese students	48.040 (26)	0.975	0.045 [0.024, 0.065]	0.034	0.036	611.860 (223)
Multiple group CFA models						
Model A: Configural invariance	155.149 (52)	0.952	0.069 [0.057, 0.082]	0.039		
Model B: Metric invariance	212.802 (61)	0.930	0.077 [0.066, 0.089]	0.123	0.022	57.653 (9)
λ_{20} free	197.567 (60)	0.936	0.074 [0.063, 0.086]	0.105	0.016	42.418 (8)
λ_{20}, λ_{23} free	186.125 (59)	0.941	0.072 [0.061, 0.084]	0.093	0.011	30.976 (7)
λ_{20}, λ_{23}, λ_{16} free	178.899 (58)	0.944	0.071 [0.059, 0.083]	0.079	0.008	23.750 (3)
Model C: Scalar invariance	562.806 (65)	0.769	0.136 [0.126, 0.146]	0.129	0.175	383.907 (7)
τ_6 free	413.514 (64)	0.838	0.115 [0.104, 0.125]	0.113	0.106	234.615 (6)
τ_6, τ_{23} free	318.823 (63)	0.881	0.099 [0.088, 0.110]	0.098	0.063	139.924 (5)
τ_6, τ_{23}, τ_{17} free	247.902 (62)	0.914	0.085 [0.074, 0.096]	0.088	0.003	69.003 (4)
τ_6, τ_{23}, τ_{17}, τ_{24} free	209.965 (61)	0.931	0.077 [0.066, 0.088]	0.083	0.013	31.066 (3)

IASMHS, Inventory of Attitudes to Seeking Mental Health Services; item 6, 'Having been mentally ill carries with it a burden of shame'; item 16, 'I would be uncomfortable seeking professional help for psychological problems because people in my social or business circles might find out about it'; item 17, 'Having been diagnosed with a mental disorder is a blot on a person's life'; item 20, 'I would feel uneasy going to a professional because of what some people would think'; item 23, 'Had I received treatment for psychological problems, I would not feel that it ought to be "covered up"'; item 24, 'I would be embarrassed if my neighbor saw me going into the office of a professional who deals with psychological problems.' All χ^2 tests and $\Delta\chi^2$ were significant, $p < 0.001$.

intercepts of items 6, 23, 17, and 14 to vary in the descending order (CFI = 0.931; RMSEA = 0.077, 90% CI [0.049–0.081]), as SRMR (0.083) exceeded slightly 0.08 and ΔCFI (0.013) exceeded slightly 0.01. Partial scalar invariance of the two-factor model could be confirmed.

Latent Mean Comparisons

The comparison of the latent means was based on only two invariant items (item 9 and 21 of factor "psychological openness"). The group of German students was used as the reference group. The Chinese students had greater latent mean than German students on the two invariant items of IASMHS ($z = 1.458$, $p < 0.001$, $d = 0.876$), which means that Chinese students have less psychological openness toward seeking help than German students.

DISCUSSION

In the present study, we have examined measurement invariance of the SSRPH, the SSOSH and the IASMHS between Chinese students and German students, which is a prerequisite for their use in cross-culture comparisons. The results demonstrated that the SSRPH had the same factor structure in the two groups and showed partial scalar invariance. The original one-factor model of the SSOSH only fitted the group of German students. Therefore, we could not examine the measurement invariance of them between the two groups. A modified model of IASMHS with two factors had partial scalar measurement invariance. Cross-cultural comparison of latent means indicated that, in descriptive terms only, German students attached a greater stigma to seeking professional psychological help than the group of Chinese students attached least social stigma to seeking professional help, but the mean difference was not significant. The comparison of the latent means of IASMHS was based on only two invariant items, and it showed that Chinese students have less openness toward seeking help than German students.

Stigma Scale for Receiving Psychological Help (SSRPH)

The one factor model of the SSRPH has an acceptable configural and metric invariance. At the level of scalar measurement invariance, loading of item 1 ('Seeing a psychologist for emotional or interpersonal problems carries social stigma') was not invariant across the groups. A re-examination of the wording indicated that the Chinese and German versions of this item were not semantically identical. The word 'stigma' was translated into Chinese as "歧视", which emphasizes the behavioral aspects of social stigma as defined by social psychologists (Rüsch et al., 2005), whereas the German translation refers more to the cognitive aspects of social stigma toward people who seek professional psychological help. The intercepts of items 3 ("People will see a person in a less favorable way if they come to know that he/she has seen a psychologist") and 5 ("People tend to like those who are receiving professional psychological help less") did also not show scalar invariance across the groups. German students were more likely to agree with items 3 and 5 than the Chinese students. In Chinese culture, high power distance is highly valued (Bond, 1996). Therapists in China are viewed as experts who give directions and advice to people suffering from psychological problems (Bond, 2010). It is likely, therefore, that the Chinese students regarded people who have completed psychotherapy as having received advice from an expert that may have helped them to get their problems under control and were therefore less likely to perceive them negatively.

We identified two items (item 2: "It is a sign of personal weakness or inadequacy to see a psychologist for emotional or interpersonal problems." and item 4: " It is advisable for a person to hide from people that he/she has seen a psychologist") to be invariant between the two groups, which could be used for cross-cultural comparisons. Both these groups were more inclined to consider that seeking help for emotional or interpersonal problems is not a sign of personal weakness and need not be hidden from other people. This showed that in both cultures, there is a certain openness to help-seeking. While 3.28 million (33%) of 9.92 million insured persons in Germany had experiences pertaining to psychological assistance, (Gaebel et al., 2013), professional help-seeking in case of mental problems has been depicted more frequently in Chinese media (TV drama, film, and so on) in the last years, and this could have contributed to the openness among Chinese individuals regarding the same.

The differences between the latent factor means should be interpreted with caution since they are based on only two items. The SSRPH latent means of German students were higher than those of both groups of Chinese students in descriptive terms only. The SSRPH was developed in the United States using the concept of social stigma. It reflects a specific Western cultural conceptualization of social stigma and may not reflect completely the way stigma is understood in China. In China, the concept of "face" represents one's moral capital and prestige in the social world (Kleinman and Kleinman, 1993). In Chinese society, there is a strong motivation for families to keep the existence of a family member's mental illness a secret because extra-familial exposure of a family member's mental illness causes loss of face of the whole family (Yang and Pearson, 2002). Further research should examine the effect of adding items that reflect concerns about negative effect for the whole family, like 'If a family member goes to see a psychologist it brings shame on the family,' to the SSRPH.

Self-Stigma of Seeking Help (SSOSH)

The original one-factor model and the modified one of the SSOSH showed a poor model fit to the data of Chinese students, and no baseline model for the analysis of measurement invariance between the groups could be established. Our results did not correspond with the findings of an earlier cross-cultural study (Vogel et al., 2013a), which found that these items demonstrated partial measurement invariance across samples collected from six areas in the world including the United States and Taiwan. In this study, items 5, 9, and 10 showed variant factor loadings between the students from Taiwan and the United States.

Although there are several cultural similarities between Taiwan and Mainland China, cultural differences are prevalent as well. Compared to Taiwanese college students, those from mainland China have stronger collectivist cultural inclination (Yang, 2015), and people in a collectivist society such as Mainland China are more inclined to attribute responsibility to patients for their mental disorders (Zhang and Deng, 2017). In other words, an important aspect of the self-stigma of people from Mainland China could be that they contribute mental illnesses to themselves and feel inferior because they differ from the majority of society. In this manner, they may consider that they have failed to meet social expectations and lost their social status and belonging. Thus, in future studies, researchers may take the collectivistic notions pertaining to self-stigma into account and investigate the effect of adding items such as "I would feel that I hurt the expectation of society by not solving my problems without professional help." Due to the internalization of the prejudices related to help-seeking also in the family unit in a collectivistic society (Soheilian and Unman, 2009), Vogel et al. (2013a) suggested adding item that reflect concerns about disappointing family members (e.g., "I would feel as though I let my family down by not solving my problems without professional help").

Inventory of Attitudes to Seeking Mental Health Services (IASMHS)

Separate CFAs showed that the original three-factor model of the IASMHS was a poor model fit to data from the group of Chinese students. These results are similar to the findings of a study that investigated the psychometric properties of the ATSPPH-SF, a short form of the IASMHS (Fang et al., 2011). It indicated that Western concepts and models of attitudes to professional psychological are not applicable to Chinese groups. A few Chinese culture-specific aspects of the attitude toward help-seeking have not been included in the scale, such as the importance of avoid bringing shame to the family, fear of losing the "face" and the importance of emotional self-control (Kung, 2004; Kim, 2007). Furthermore, non-cultural barriers, which was found to be more salient than cultural barriers in help-seeking (Kung, 2004), should also be taken into account, for example lack of knowledge of professional psychological help, the underdevelopment of the mental health services and the financial burden of help-seeking in Chinese society. Therefore, there is a need for culturally universal instruments for assessing attitudes to seeking psychological help for the cross-cultural comparisons, but developing such instruments would not be easy, because measurement invariance is more likely to be found when culturally similar countries are compared (Rippl and Seipel, 2008), and it is probably harder to find measurement invariance in heterogeneous cultures (Schulte et al., 2013).

By examination of the measurement invariance of a modified model of IASMHS with two factors, we had found only two items ("people should work out their own problems; getting professional help should be a last resort" and "people with strong characters can get over psychological problems by themselves and would have little need for professional help") to be invariant between the two groups and could be used for cross-cultural comparisons. It indicated that both in German and Chinese culture, it is important to solve problems through one's own strength.

Limitations and Conclusion

This study has some limitations. First, the sample was limited to students from China and Germany, so the results cannot be generalized to the general population of these cultures. Second, the compared samples possessed different characteristics (age, gender, and academic degree). Propensity score matching was conducted without including the variable of academic degree, since the category "other" concerning the participant's academic degrees in the German sample referred to a specific German degree "Staatsexam," which is equivalent to a bachelor's degree combined with a master's degree. Under these circumstances, it is unclear whether measurement invariance occurred due to cultural differences. For future research, it would be better to consider a variable such as "the number of semesters since bachelor" instead of the participants' "academic degree." Third, recruitment of a volunteer sample of students may have produced a selection bias, because those who were interested in the topic of seeking psychological help or had experience of psychotherapy may have been more likely to participate. The recruitment of the participants was carried out without a systematic selection process. Therefore, the self-selection of participants, which is a typical disadvantage of online surveys, could be detrimental to the representativeness of the random sample.

Overall, this study shows acceptable measurement invariance for the SSRPH and two items (item 9 and item 21) of IASMHS, and these scales or items could be used for cross-culture comparison. The group differences we have reported should be interpreted with caution because they are based on only the two items of each scale that demonstrated cultural invariance. The SSOSH did not show measurement invariance. Intercultural cooperation should be encouraged in order to facilitate the development of cross-cultural concepts concerning the stigma and attitude toward seeking professional psychological help, taking collectivistic notions into account, and to improve research on intercultural comparisons. This is one of the first studies to investigate the measurement invariance of the SSRPH, SSOSH, and IASMHS in large groups in China and Germany and the results should guide future research in this field. Beyond the cross-cultural comparisons, the basic concepts of stigma and attitude are crucial to improving understanding of why people reject psychological interventions even when they are recommended treatments and it has relevance for health care provision in general.

ETHICS STATEMENT

This study was carried out in accordance with the recommendations of "Ordnung für die Lokale Ethik-Kommission des Fachbereichs Psychologie vom 10.02.2010",

die Lokale Ethik-Kommission (LEK) of University of Marburg, with written informed consent from all subjects. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by the 'Ethic-Committee of Department of Psychology of University Marburg'.

AUTHOR CONTRIBUTIONS

YZ and WR were mainly responsible for the overall conception, design, and analysis of this study. YZ wrote the manuscript. GL made an important contribution to the revising of statistical analysis and interpretation of the data. JX contributed to sample preparation. WR and GL provided critical feedback and helped shape the manuscript.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01249/full#supplementary-material

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7.2 Anhang 2. Studie 2

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RESEARCH ARTICLE Open Access

Are comparisons of mental disorders between Chinese and German students possible? An examination of measurement invariance for the PHQ-15, PHQ-9 and GAD-7

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Abstract

Background: The Patient Health Questionnaire (PHQ) is one of the most commonly used instruments to assess mental disorders. However, research on its cross-cultural measurement invariance is not yet sufficient. This study examined the measurement invariance of the Chinese and German versions of the PHQ's somatic symptom severity scale (PHQ-15), depressive symptom severity scale (PHQ-9) and seven-item Generalized Anxiety Disorder (GAD-7) scale as a prerequisite for their use in cross-cultural comparisons.

Methods: We used online data collected from groups of Chinese students in China ($n = 413$) and German students in Germany ($n = 416$). Separate measurement models for each group were examined using confirmatory factor analysis and measurement invariance testing was conducted to test the cross-cultural equivalence.

Results: Findings demonstrated that the PHQ-9 and GAD-7 had partial scalar measurement invariance, but the cross-cultural measurement invariance of the PHQ-15 could not be confirmed. Comparisons of latent means did not indicate differences in the levels of depression and anxiety symptoms between Chinese and German samples.

Conclusion: The PHQ-9 and GAD-7 can be used in cross-cultural comparison of prevalence, but the intercultural use of PHQ-15 is more problematic. Findings are discussed from intercultural and methodological perspectives.

Keywords: Cross-cultural comparison, Measurement invariance, Patient Health Questionnaire-15 (PHQ-15), Patient Health Questionnaire-9 (PHQ-9), Generalized Anxiety Disorder-7 (GAD-7)

Background

Depression, anxiety disorders and somatoform disorders are the most common mental disorders worldwide and differences in epidemiology exist across countries and cultures [1, 2]. Previous studies showed that base rates of depression and anxiety disorders are lower in China than in American and European countries [1, 3–5], and prevalence rates of somatoform disorders are inconsistent [6, 7]. For example, the 12-month prevalence of anxiety disorders in China was 5.0% compared to 15.3% in Germany [8, 9] and for major depressive episodes was 3.6% in China and 6% in Germany [8, 10]. Cultural, linguistic and methodological aspects could contribute to explaining the differences in prevalence rates of disorders. According to a literature review [4], the lower prevalence of major depressive disorders that persisted in East/Southeast Asia compared to other regions of the world still remained, even after adjusting for methodological differences. The study showed evidence that cross-national differences may reflect either true prevalence differences or the cross-cultural insensitivity of

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diagnostic criteria such as the *Diagnostic and Statistical Manual of Mental Disorders* [11] (DSM) and the *International Classification of Diseases* [12] (ICD) [13]. A deeper cross-cultural examination of these differences is overdue.

The Patient Health Questionnaire [14], which includes the somatic symptom severity scale (PHQ-15), the depressive symptom severity scale (PHQ-9) and the seven-item Generalized Anxiety Disorder (GAD-7) scale, screens, identifies and measures the severity of most common mental disorders and is one of the most commonly used instruments to assess psychological disorders. It is a short self-report questionnaire based on the diagnostic criteria of the DSM-IV and its scales also have a high level of suitability for the newly developed DSM-V [11], with the American Psychiatric Association (APA) recommending them for measuring the severity of depression, anxiety disorders and somatoform disorders [15]. In both Western and Chinese general populations it showed good reliability and validity of scores [16–22]. Furthermore, taking into consideration that Western psychologization is stronger than Chinese somatization, this self-completed questionnaire had the advantage of revealing more psychological distress than in interviews with the Chinese population [23].

In order to accurately compare the cross-cultural prevalence of these mental disorders, diagnostic measurements such as the PHQ must be measurement invariant across cultures and languages (comparable both cross-culturally and cross-linguistically). DSM- or ICD-based diagnostic measures were criticized as not being culturally sensitive enough due to culture-specific forms of disorders [24]. Cultural differences in scale scores can also result from differences in the understanding of certain concepts, translation problems, frequency of word use or other measurement errors, and the potentially biased items should be identified before comparison [25]. Despite the widespread use of the PHQ, cross-cultural examination of its measurement invariance has been mostly neglected and such examinations have scarcely been made between mainland Chinese and Western samples.

The commonly used measurement equivalence approach (also called measurement invariance) is confirmatory factory analysis (CFA) and this offers a robust statistical framework for testing measurement invariance. The most frequently assessed levels of measurement invariance included configural, metric and scalar invariance, which refer to different model parameters of a measurement model and build on each other in a hierarchical structure. Configural invariance, the least restrictive form of measurement invariance, is present when the number of factors and the pattern of the factor loadings between the latent variables and indicators in the compared groups are similar. When the factor loadings of items are also invariant across groups, then metric invariance could be assumed. Scalar invariance exists if, additionally, the intercepts of the indicator variables are identical [26]. Scalar invariance or at least partial measurement invariance, which is declared when at least two items per latent variable (i.e., factor loadings, factor intercepts) are found to be invariant, is a prerequisite for the comparison of latent mean values obtained from subsamples [27–29].

In previous studies, measurement invariance of the PHQ-15 with a bifactor model (one general somatic symptom factor and four orthogonal-specific symptom factors of pain, gastroenterology, cardiovascular and fatigue symptoms) could be confirmed with samples of college students from Germany and Switzerland [30], between German and migrants [31] and between patient samples from Germany and the Netherlands, but not between Chinese patient samples and Western (German and Dutch) patient samples [32]. Measurement invariance with a one-factor model was confirmed between primary care patients of native-born Germans, Russian-speaking immigrants and native-born Russians [33]. So far, hardly any studies have explored measurement invariance of the PHQ-15 in samples from mainland China and Western countries.

Previous studies have predominantly been able to confirm a one-factor structure of the PHQ-9 with different samples across cultures or migrants in Western countries and found measurement invariance of the scale in six ethnic groups in the Netherlands, in diverse college populations in the USA and in first- and second-generation migrants of the German population [34–38]. However, the items “sleep problems”, “appetite changes” and “anhedonia” showed cross-cultural measurement biases when comparing Turkish immigrants and Germans, and the item “psychomotor problems” seemed to be culturally biased in Surinam Dutch males compared to Dutch males. A bifactor structure (“somatic factor” and “non-somatic factor”) could be confirmed in a German study with samples across gender [39] and in a Japanese study between clinical and nonclinical samples [40].

Existing evidence demonstrates that the GAD-7 has good psychometric properties and shows reliability and validity of scores as a measure of anxiety in the German general population [19] and in various samples in Chinese primary care [21, 41]. So far, only a few studies have examined cross-cultural measurement invariance of the GAD-7. A study by Parkerson, Thibodeau, Brandt, Zvolensky, and Asmundson [42] has confirmed a revised unitary model of the GAD-7 and found that Black/African Americans with high GAD symptoms scored lower on the GAD-7 than White/Caucasian Hispanic participants. It indicated that the GAD-7 is not culturally sensitive enough and the lower prevalence rate for the

Black/African American sample could reflect cross-cultural measurement biases related to the diagnostic instrument rather than true differences in GAD symptoms. It is still unclear whether such cross-cultural measurement biases also exist in the epidemiological comparison of cultural groups from China and Western countries.

To address the above-mentioned limitations of current studies in examining cross-cultural measurement biases of the PHQ in samples from mainland China and Western countries, we conducted this study to investigate measurement invariance of the PHQ-15, PHQ-9 and GAD-7 across Chinese and Western (represented by Germany) cultures. We investigated student samples because of the advantage of comparability in educational status, age and other psychosocial aspects, but also the different cultural backgrounds. Based on previous research, we expected there to be measurement invariance of the PHQ-9 between the two cultures but predicting the same for the PHQ-15 may be problematic. Due to lack of previous studies, we did not make a hypothesis about the intercultural measurement invariance of the GAD-7. Differences in latent means for somatic symptoms, depression and anxiety syndromes were also assessed if scalar measurement invariance across cultures was demonstrated. Investigating the cross-cultural equivalence of the PHQ-15, PHQ-9 and GAD-7 has high relevance to the diagnosis of mental disorders and is a prerequisite for cross-cultural comparisons.

Methods

Participants

The online data used in the present study are from a dataset collected in a project for intercultural comparison of willingness to seek psychological help [43]. The data were collected in Germany and China in August 2016 and the collection lasted for 6 months. German students at the University of Marburg (total number of students: 26,355) were invited to take part in the survey via the university email list. To increase the interest to participate, they could be entered into a draw for vouchers worth 20 euros. Chinese students at the University of Zhengzhou in China were recruited on "WeChat", a popular social media platform used by most Chinese students, and they received no financial reward. Chinese students who were in the WeChat groups of various affiliated faculties (e.g., Economics and Electronic Information Engineering: 9156 students) were invited to participate in this study. After the application of exclusion criteria (no migration background; a minimum scale processing time of 10 min), the Chinese sample available for analysis decreased from 566 to 413 and the German sample from 456 to 416. The demographic characteristics of the two groups are summarized in Table 1.[1] The study was approved by the ethics committee of the Faculty of Psychology at the University of Marburg (approval number: 2016-19 k).

Assessment instruments

PHQ-15

The PHQ-15 was used to assess and diagnose somatoform disorders [44] and includes 15 prevalent somatic symptoms that represent the most common symptoms observed in primary care that typically cannot be fully explained by a diagnosed general medical condition. Two of the items were from the depression subscale of the PHQ-9 ("*Trouble falling or staying asleep, or sleeping too much*"; "*Feeling tired or having little energy*"). Three response categories were offered: "not bothered at all", "bothered a little" or "bothered a lot". The total score ranged from 0 to 30. The reliability and validity of the scores were supported by studies both in German and Chinese populations [17, 18, 22].

PHQ-9

The PHQ-9 was used to assess and diagnose depression [45]. The participants responded on a four-point Likert scale and the total score ranged from 0 to 27. The PHQ-9 has good psychometric properties and includes high sensitivity for depressive disorders and good specificity for screening of patients with depression in both Chinese and German general populations [20, 46] and in their corresponding primary care populations [16, 17]. The PHQ-9 was considered superior to other self-rating instruments for the detection of depressive disorders [17].

GAD-7

The seven-item GAD-7 was developed to identify potential patients with a generalized anxiety disorder [47] and to assess the severity of symptoms of general anxiety because of its good operating characteristics for anxiety disorders [48]. Participants indicated agreement with the presence of symptoms such as "*Feeling nervous, anxious or on edge*" and "*Not being able to stop or control worrying*" on a four-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). The total score ranges from 0 to 21.

[1] "Since the demographic data of the two samples was significantly different, propensity score matching (by gender and age) was performed to exclude the test effect of gender and age for the purpose of data analysis. However, the results did not differ from those obtained prior to performing the propensity score matching test. The results of the comparison between the underlying structure and the invariant items of the scales remained unchanged. Therefore, we presented the results without conducting propensity score matching, owing to the large sample size" [43].

Table 1 Participant Demographic Characteristics

Variables	German Students ($n = 416$)	Chinese Students ($n = 413$)	*p*-value	Effect size
Sex [female] (%)	294 (70.7%)	250 (60.5%)	.001	$\varphi = .15$
Age (Mean ± SD; range)	23.85 ± 4.66; 18–58	20.79 ± 2.57; 17–39	$p < .001$	Cohen's $d = .81$
Current Academic Degree			$p < .001$	Cramer's $V = .78$
Bachelor (%)	183 (44%)	391 (94.7%)		
Master (%)	83 (20%)	7 (1.7%)		
Ph.D. (%)	17 (4.1%)	4 (1.0%)		
Others (%)	137 (32%)	11 (2.7%)		

Note. "Other" refers to a combined Bachelor's and Master's degree program. The comparisons of sex and academic degree were calculated using Chi-squared test. The age comparison was calculated using T-test

Translation

The German validated versions of the PHQ-15, PHQ-9 and GAD-7 [14] were used in the German sample and the translation was done according to "state of the art criteria" using the translation/retranslation method. The Chinese versions of the PHQ-15 [22], PHQ-9 [46] and GAD-7 [49] were also validated in previous studies and the translation followed the customary translation/back-translation method.

Statistical analysis

First, SPSS (version 25, IBM, Armonk, USA) software was used for checking the descriptive statistics (means, standard deviations, skewness and kurtosis of the sum scores and evidence of internal consistencies for each scale and each sample), and then we used the software program *Mplus* v7.4 [50] for further data analysis. We examined separate measurement models for each group using confirmatory factor analysis (CFA). To assess the model fit we used χ^2 difference tests, as recommended by Hu and Bentler [51]. Because the χ^2 difference test is sensitive to sample size, other common indices to assess the goodness of model fit were also used: comparative fit index (CFI), root mean square error of approximation (RMSEA), standardized root mean residual (SRMS) and difference in CFI between the base model and the constrained model (ΔCFI). The following cutoff values were used: CFI ≥ .90 [52], RMSEA ≤ .08 and SRMR ≤ .08 [53].

Then the step-up approach was applied to add a series of increasingly stringent equality constraints to the models [27, 54]. The configural invariance of the baseline model was estimated as the starting point of the multiple group comparisons, in which all parameters (factor loadings and intercepts of indicators) vary freely. We investigated whether the construct was similarly displayed in different groups, meaning that both the number of specified factors and the indicators that load on the factors should be comparable. In the next step, the metric invariance was checked by constraining the factor loadings of indicators to be equal. Then the scalar invariance, the next highest form of measurement invariance, was assessed by additionally constraining intercepts of indicators to be equal. After gradual equality constraining of the parameters across the groups, these models were compared with the baseline model. The decision on whether a model was accepted or not was made according to the χ^2 difference test [51]. As the χ^2 value was dependent on sample size, Cheung and Rensvold [55] suggested that the difference in CFI between the baseline model and the constrained model should not be more than 0.01. If the full measurement invariance cannot be confirmed, partial invariance should be examined [28]. The constrained model based on the modification indices was subsequently examined by releasing the equality constraints in descending order for misspecified items. At least two loadings or intercepts should be equal between groups in order to establish partial measurement invariance. If evidence for scalar invariance or at least partial scalar invariance[2] exists, then the latent means of samples could be compared [27, 28].

Results

Descriptive statistics

Means, standard deviations, skewness and kurtosis of the sum scores and evidence of internal consistencies for each scale and each sample are presented in Table 2. According to the cutoff values (skewness ≤3, kurtosis ≤8) recommended by Kline (2010), skewness and kurtosis indicated a normal distribution in the samples. The internal consistency of the scores was at least good (> .70). Items 2 ("back pain") and 9 ("fainting spells") in the German version of the PHQ-15 showed a small correlation (< .10) with other items of the scale, mainly because of

[2]Partial measurement invariance is declared when at least two items per latent variable (i.e., factor loadings, factor intercepts) are found to be invariant [29].

Table 2 Means, Standard Deviations, Skewness, Kurtosis, and Internal Consistency across Scales and Samples

	German Students					Chinese Students				
Scale	*M*	*SD*	Skew	Kurt	α	*M*	*SD*	Skew	Kurt	α
PHQ-15	7.39	4.49	.77	.44	.76	6.87	4.67	.75	.22	.83
PHQ-9	6.77	4.84	.76	.09	.85	6.99	4.76	1.01	1.49	.88
GAD-7	6.23	4.27	.80	.06	.87	5.38	4.00	1.18	1.93	.90

Notes. PHQ-15 = Patient Health Questionnaire-15 Physical Symptoms; PHQ-9 = Patient Health Questionnaire-9 Depression Symptoms;
GAD-7 = Generalized Anxiety
Disorder 7-item Scale; Skew = Skewness; Kurt = Kurtosis

very low or very high base rates compared to other symptoms. Despite these findings, we first tested the original models using CFA.

Measurement invariance of the PHQ-15

Single-group CFA

Results from CFA are presented in Table 3. The unidimensional model of the PHQ-15 was examined first, which assumes only one latent factor (model A). In both groups, the PHQ-15 resulted in acceptable SRMR but poor CFI and RMSEA values (Chinese group: CFI = .827, RMSEA = .079, 90% CI [.070, .089], SRMR = .057; German group: CFI = .716, RMSEA = .086, 90% CI [.077, .096], SRMR = .065). This means that a one-factor solution does not fit the samples of Chinese and German students. Then we tried the hierarchical measurement model with four first-order latent factors and a second-order latent factor (model B) recommended by Mewes et al. [31], which was based on the criteria for somatoform disorders and physical complaints of depressive disorders in ICD-10 and DSM-IV. The four factors are as follows: pain symptoms (item 2 "back pain," item 3 "pain in your arms, legs or joints," item 4 "menstrual cramps or other problems with your periods", item 5 "pain or problems during sexual intercourse", item 6 "headaches"), gastrointestinal symptoms (item 1 "stomach pain", item 12 "constipation, loose bowels or diarrhea", item 13 "nausea, gas or indigestion"), cardiovascular symptoms (item 7 "chest pain", item 8 "dizziness", item 9 "fainting spells", item 10 "feeling your heart pound or race", item 11 "shortness of breath") and fatigue symptoms (item 14 "trouble sleeping", item 15 "feeling tired or having low energy") (see Supplementary Material, Table S1). The model with four first-order latent factors and a second-order latent factor achieved an acceptable fit for both samples in terms of RMSEA (Chinese group: CFI = .936, RMSEA = .050, 90% CI [.039, .061], SRMR = .042; German group: CFI = .914,

Table 3 Fit Indices from Comparative Factor Analysis (CFA) and Invariance Analyses between Groups for the PHQ-15

	χ2 *(df)*	CFI	RMSEA [90% CI]	SRMR	ΔCFI	Δχ2 *(df)*
model A. one-factor model						
German Students	369.242 (90)	.716	.086 [.077, .096]	.065		
Chinese Students	323.274 (90)	.827	.079 [.070, .089]	.057		
model B. four-factor model						
German Students	168.941 (84)	.914	.049 [.038, .060]	.049	.016	200.301 (6)
Chinese Students	170.681 (84)	.936	.050 [.039, .061]	.042	.015	152.593 (6)
Multiple group CFA model B						
Configural invariance	339.622 (168)	.926	.050 [.042, .057]	.045		
Metric invariance	410.344 (183)	.902	.055 [.048, .062]	.071	.024	70.722 (15)
λ_9 free	393.042 (182)	.909	.053 [.046, .060]	.063	.023	53.420 (14)
λ_9, λ_{10} free	383.574 (181)	.913	.052 [.045, .059]	.059	.013	43.952 (13)
λ_9, λ_{10}, λ_{11} free	371.885 (180)	.918	.051 [.043, .058]	.056	.008	32.263 (12), $p > .001$
Scalar invariance	556.111 (195)	.845	.067 [.060, .073]	.067	.073	184.226 (15)
τ_{10} free	501.412 (194)	.868	.062 [.059, .069]	.062	.050	129.527 (14)
τ_{10}, τ_2 free	482.435 (193)	.876	.060 [.053, .067]	.060	.042	110.55 (13)
τ_{10}, τ_2, τ_5 free	469.157 (192)	.881	.059 [.052, .066]	.059	.037	97.272 (12)
τ_{10}, τ_2, τ_5, τ_{12} free	451.368 (191)	.887	.058 [.051, .065]	.058	.031	79.483 (11)
τ_{10}, τ_2, τ_5, τ_{12}, τ_9 free	440.687 (190)	.892	.056 [.050, .063]	.056	.026	68.802 (10)
τ_{10}, τ_2, τ_5, τ_{12}, τ_9, τ_6 free	430.746 (189)	.896	.056 [.049, .062]	.054	.022	58.864 (9), $p < .001$

Notes. PHQ-15 = Patient Health Questionnaire-15 Physical Symptoms; Item 2 = 'back pain'; item 5 = 'pain or problems during sexual intercourse'; item 6 = 'headaches'; item 9 = 'fainting spells'; item 10 = 'feeling your heart pound or race'; item 11 = 'shortness of breath'; item 12 = 'constipation, loose bowels, or diarrhea.' All χ^2 tests and Δχ2 were significant, $p < .001$

RMSEA = .049, 90% CI [.038, .060], SRMR = .049). Baseline models for analysis of measurement invariance between cultures could be established.

Measurement invariance between cultures

After confirming the superiority of model B compared to model A, measurement invariance analysis between cultures was performed. The testing results of measurement invariance for the PHQ-15 are presented in Table 3. The baseline model of the PHQ-15 showed acceptable configural invariance (CFI = .926, RMSEA = .050, 90% CI [.042, .057], SRMR = .045). In the next step, the metric invariance was tested by constraining the factor loadings to be equal. The fit of the metric invariance was poor, with a decrease in CFI of more than 0.01 (CFI = .902, RMSEA = .055, 90% CI [.048, .062], SRMR = .071, ΔCFI = .024). Modification indices indicated that the loading of items 9 (fainting spells), 10 (feeling your heart pound or race) and 11 (shortness of breath) differed across the groups. After releasing the constraints for these items in descending order, the fit of this modified model was acceptable (CFI = .918, RMSEA = .051, 90% CI [.043, .058], SRMR = .056, ΔCFI = .008). Then the factor intercepts were constrained to be equal and the scalar invariance was shown to be poor, with a CFI of .845 and a drop in CFI of more than 0.01 (ΔCFI = .073). The modification indices showed that the intercepts of items between the two groups were invariant. After releasing the equality constraints for items 10 (feeling your heart pound or race), 2 (back pain), 5 (pain or problems during sexual intercourse), 12 (trouble sleeping), 9 (fainting spells) and 6 (headaches) in descending order, the fit of this modified model for checking partial scalar invariance was still unacceptable, with a poor model fit and a drop in CFI of more than 0.01 (CFI = .897, ΔCFI = .021). Hence, the partial scalar invariance of the four-factor model between the groups could not be established and comparison of the latent means could not be conducted.

Measurement invariance of the PHQ-9

Single-group CFA

Similar to the PHQ-15, we first examined the fit of the one-factor model of the PHQ-9 using CFA in the two groups (Table 4). The one-factor model of the PHQ-9 had acceptable CFI and SRMR in both groups but poor RMSEA, with values of more than .08 (Chinese group: CFI = .951, RMSEA = .082, 90% CI [.065, .099], SRMR = .038; German group: CFI = .900, RMSEA = .104, 90% CI [.088, .120], SRMR = .051). Therefore we tried a two-factor-solution, which was suggested by Petersen et al. [39]. The two factors included "somatic" (e.g., sleep disturbances, fatigue and appetite changes) and "non-somatic" items (e.g., depressed mood, lack of interest and suicidal ideation). The model with two latent factors afforded a good fit in both samples (Chinese group: CFI = .957, RMSEA = .078, 90% CI [.061, .096], SRMR = .037; German group: CFI = .969, RMSEA = .059, 90% CI [.040, .077], SRMR = .033). A baseline model for analysis of measurement invariance between the two groups could be established.

Table 4 Fit Indices from Comparative Factor Analysis (CFA) and Invariance Analyses between Groups for the PHQ-9

	χ2 *(df)*	CFI	RMSEA [90% CI]	SRMR	ΔCFI	Δχ2 *(df)*
model A. one-factor model						
German Students	147.851 (27)	.900	.104 [.088, .120]	.051		
Chinese Students	101.362 (27)	.951	.082 [.065, .099]	.038		
model B. two-factor model						
German Students	63.070 (26)	969	.059 [.040, .077]	.033		84.781
Chinese Students	91.453 (26)	.957	.078 [.061, .096]	.037		9.909, p > .001
Multiple groups CFA models						
Configural invariance	154.523 (52)	.962	.069 [.057, .082]	.035		
Metric invariance	229.833 (61)	.938	.082 [.071, .093]	.082	.024	75.310 (9)
λ_8 free	185.565 (60)	.954	.071 [.060, .083]	.064	.008	31.042 (8)
λ_8, λ_1 free	174.288 (59)	.958	.069 [.057, .081]	.068	.004	19.765 (7)
λ_8, λ_1, λ_3 free	169.246 (58)	.959	.068 [.056, .080]	.061	.002	14.723 (6), p > .001
Scale invariance	302.171 (65)	.913	.094 [.083, .105]	.085	.046	132.925 (7)
τ_8 free	216.478 (64)	.944	.076 [.065, .087]	.063	.015	47.232(6)
τ_8, τ_4 free	191.586 (63)	.953	.070 [.059, .082]	.061	.006	22.340 (5)
τ_8, τ_4, τ_1 free	179.934 (62)	.957	.068 [.056, .079]	.061	.002	10.688 (4), p > .001

Note. PHQ-9 = Patient Health Questionnaire-9 Depression Symptoms; Item 1 = 'lack of interest'; item 3 = 'sleep difficulties'; item 4 = 'feeling tired or having little energy'; item 8 = 'moving or speaking slowly, or fretful.' All χ2 tests and Δχ2 were significant, p < .001

Measurement invariance between cultures

We examine the measurement invariance across cultures with model B because of its better model fit than model A. The model specifications for the PHQ-9 are displayed in Table 4. The global fit for the configural model was good (CFI = .962, RMSEA = .069, 90% CI [.057, .082], SRMR = .035). Then, item loadings were constrained to be equal in the metric invariance model. The global fit was poor, with RMSEA and SRMR bigger than .080 and ΔCFI bigger than .01. Modification indicated that loadings of items 8, 1 and 3 were invariant. The loading of items 1 (lack of interest) and 8 (moving or speaking slowly, or fretful) was higher in the Chinese sample and for item 3 (sleep difficulties) was higher in the German sample. Partial metric invariance was established by allowing the loadings of these items to vary in descending order (CFI = .959, RMSEA = .068, 90% CI [.056, .080], SRMR = .061, ΔCFI = .002). At the level of scalar invariance, RMSEA and SRMR were also bigger than .08 and the drop in CFI was larger than .01. After releasing the equality constraints of items 8, 4, and 1 in descending order, partial scalar invariance could be established (CFI = .957, RMSEA = .068, 90% CI [.056, .079], SRMR = .061, ΔCFI = .002).

Latent mean comparison

Comparison of the latent means was based on five invariant items (items 2, 5, 6, 7 and 9) and the German sample was used as the reference group. The Chinese students had a higher latent mean than German students, which means that Chinese students have more depressive symptoms than German students, but the mean difference was not significant (z = .344, d = .153, p = .365).

Measurement invariance of the GAD-7

Single-group CFA

CFA of the original one-factor model demonstrated an acceptable global fit in the sample of Chinese students, but the RMSEA indicated a poor fit in the sample of German students (Table 5). Modification indices suggested that the error terms of items 5 ("being so restless that it is hard to sit still") and 6 ("becoming easily annoyed or irritated") were correlated in both samples, which was similar to the findings from Parkerson et al. (2015). To improve the comparability of the two groups, correlation between the two item errors was allowed and this produced an acceptable RMSEA for the sample of German students. At the same time, the global model fit for the sample of Chinese students was also improved significantly ($\Delta\chi^2$ (df) = 15.219 (1), $p < .001$).

Measurement invariance between cultures

The results of tests of the measurement invariance of the GAD-7 are presented in Table 5. The baseline model of the GAD-7 demonstrated a good global fit (CFI = .978, RMSEA = .074, 90% CI [.057, .091], SRMR = .030) and its configural invariance was confirmed. At the level of metric invariance, the RMSEA was larger than .08 and the drop in CFI was larger than .01 (RMSEA = .081, 90% CI [.066, .097], ΔCFI = .012). Modification indices indicated that the loading of item 1 was not invariant. The loading of item 1 was higher in the German sample than in the Chinese sample. A modified model by releasing the equality constraints for item 1 provided a good fit and the assumption of metric invariance held (CFI = .973, RMSEA = .074, 90% CI [.059, .090], SRMR = .048, ΔCFI = .005). On testing for scalar invariance, the RMSEA was larger than .08 and the drop in CFI was larger than .01 (RMSEA = .095, 90% CI [.082, .109], ΔCFI = .026). Modification indices showed that the intercepts of items 4, 1 and 2 were higher in the German sample than the Chinese sample. By releasing the equality constraints of items 4, 1 and 2 in descending order, the global fit of this model was improved (CFI = .969, RMSEA = .075, 90% CI [.061, .090], SRMR = .052, ΔCFI = .004) and partial scalar invariance was established.

Latent mean comparison

Comparison of the latent means was based on four invariant items (items 3, 5, 6 and 7) and the sample of German students was used as the reference group. The Chinese students had a lower latent mean than German students on the GAD-7, but the difference was not significant (z = −.023, d = .023, p = .759).

Discussion

In our study, we examined the cross-cultural measurement invariance of the PHQ-15, PHQ-9 and GAD-7 by comparing two cultural groups of students, one from mainland China and the other from Germany. The results demonstrated that the original one-factor model of the PHQ-15 fitted neither of the groups. The bifactor model (one general factor and four orthogonal symptom-specific factors) of the PHQ-15 showed a better model fit in both groups but only configural and metric invariance between the groups could be confirmed, therefore it is not recommended for the cross-cultural comparison of means. The PHQ-9 and GAD-7 had the same factor structure in the two groups and showed partial scalar invariance. This means that although these scales show differences on individual items, they are generally comparable across the two cultural groups of students, which provides the possibility for cross-cultural comparative studies in the future.

We could not confirm the bifactor model (one general factor and four orthogonal symptom-specific factors) of the PHQ-15 with the cross-cultural student samples as suggested by Mewes et al. [31]. We also did not find full

Table 5 Fit Indices from Comparative Factor Analysis (CFA) and Invariance Analyses between Groups for the GAD-7

	χ2 *(df)*	CFI	RMSEA [90% CI]	SRMR	ΔCFI	Δχ2 *(df)*
Single group CFA – original one-factor model						
German Students	53.671 (14)	.967	.083 [.060, .106]	.035		
Chinese Students	49.414 (14)	.977	.078 [.055, .102]	.028		
Single group CFA ($\theta_{5,6}$ free)						
German Students	44.662 (13)	.974	.077 [.053, .102]	.031	.013	9.009, $p > .001$
Chinese Students	34.195 (13)	.986	.063 [.038, .089]	.023	.009	15.219
Multiple group CFA models ($\theta_{5,6}$ free)						
Configural invariance	87.866 (27)	.978	.074 [.057, .091]	.030		
Metric invariance	127.041 (34)	.966	.081 [.066, .097]	.073	.012	39.175 (7)
λ_1 free	107.649 (33)	.973	.074 [.059, .090]	.048	.005	19.783 (6), p > .001
Scale invariance	185.052 (39)	.947	.095 [.082, .109]	.063	.026	77.403 (6)
τ_4 free	164.669 (38)	.954	.090 [.076, .104]	.058	.019	57.020 (5)
τ_4, τ_1 free	137.262 (37)	.963	.081 [.067, .096]	.052	.010	29.613 (4)
τ_4, τ_1, τ_2 free	120.930 (36)	.969	.075 [.061, .090]	.052	.004	13.281 (3), p > .001

Note. GAD-7 = Generalized Anxiety Disorder 7-item; Item 1 = 'feeling nervous, anxious, or on edge'; item 2 = 'not being able to stop or control worrying'; item 4 = 'trouble relaxing.' All χ2 tests and Δχ2 were significant, $p < .001$

metric and partial scalar invariance. The possible reason for this could be that the samples included in our study have a greater difference in cultural background. Our result corresponded with the findings of an earlier cross-cultural study [32], which also could not confirm measurement invariance of the PHQ-15 between Chinese and German samples of outpatients. In our study, the pattern of variant items at the level of metric and scalar invariance across groups was mixed. Chinese students are more likely to endorse items 10 ("feeling your heart pound or race"), 11 ("shortness of breath"), 9 ("fainting spells") and 12 ("constipation, loose bowels, or diarrhea") and German students are more likely to endorse items 5 ("pain or problems during sexual intercourse"), 6 ("headaches") and 2 ("back pain"). Regarding the differences between individual items, there was a slight attempt in previous studies to focus on the influence of culture on shaping somatic awareness. A possible explanation for the differences could be that the levels of interoceptive accuracy and somatic awareness between people from Western and non-Western countries are different [56], and this phenomenon could be more strongly expressed on certain somatic symptoms in cross-cultural comparisons. Somatic awareness is a top-down process that is driven by attention, beliefs and expectations [57, 58] and these factors may affect the evaluation of the importance of different physical symptoms in different cultures. Linguistics is an important approach for studying this cultural difference. For example, future research could focus on whether certain body parts are used more than others in the description of physical states in the Chinese and German languages. In terms of methodology for testing a series of equality constraints on parameters in measurement models such as the PHQ-15 that have a complex structure across groups, multi-group CFA has the limitation that "the standard model fit criteria do not represent 'golden rules'" [59]. An alternative approach could be the multi-group exploratory structural equation modeling recommended by Marsh et al. [60], which can test measurement invariance directly and is viable for scales with a complex structure.

Consistent with the results of previous studies by Doi et al. [61] and Petersen et al. [39], a bifactor structure of the PHQ-9 could be confirmed in our study. We found partial metric and partial scalar invariance of the PHQ-9 across the two cultural groups. Chinese students are more likely to endorse items 1 (lack of interest) and 8 (moving or speaking slowly, or being fidgety) and German students are more likely to endorse items 3 (sleep difficulties) and 4 (fatigue). The higher score on item 1 (lack of interest) is consistent with the results of the study by Leung [62], which found that East Asian students who share the Confucian culture (high regard for academic achievement) displayed relatively negative attitudes toward learning even though they outperformed Western students. Hau and Ho [63] have reviewed the previous studies and found that Chinese students are more likely to study under external pressure and have lower interest in studying. Regarding "sleep problems", our study could support Parker, Cheah and Roy's [64] finding that insomnia is not being overrepresented in the Chinese sample, although many Asian psychiatrists have seen it as one of the most common reasons for depressed Chinese to seek help. It appears to be a true concomitant of depression and not distinctly culturally determined.

Chinese students may have a higher prevalence of depression than other populations in China because they are more open and inclined to express emotional distress. This is in line with the comparison of latent means of the two groups, showing that German students did not express more depressive symptoms than Chinese students, although previous studies have found that the prevalence of depression disorders was lower in Southeast Asia (including China) than in Western Europe [4, 65]. To use the PHQ-9 in the general Chinese population, who are not necessarily willing to report the emotional symptoms of depression or are less aware of them, a lower cut-off value would be advisable in order to maximize the detection of people with depression [66].

Partial scalar invariance of the original one-factor model of the GAD-7 could be confirmed across groups with Chinese and German students. The difference across groups indicated that German students are more likely to report anxiety symptoms such as "feeling anxious" (item 1), "not being able to stop worrying" (item 2) and "trouble relaxing" (item 4). But these differences were not significant and the latent means of the two groups did not differ, which means that German students did not have significantly higher levels of general anxiety than Chinese students. This is not consistent with the results of previous studies, which show that non-Western cultures have less risk of anxiety disorder [3, 67]. In Asian countries, culture-specific anxiety symptoms such as shame [68] were not included in the GAD-7 and it is unclear whether such aspects play a role in the measurement of general anxiety severity because empirical research is lacking.

Limitations

This study has some limitations that should be considered. First, our study was conducted in samples of college students, which controlled for other non-cultural factors contributing to the results (e.g., education), but it is unclear whether the findings of this study can be generalized to other population groups. It could be more difficult to establish measurement invariance in other populations across cultures because the younger generation who grew up after China adopted policies of reform and greater openness were more influenced by Western lifestyle and values and may have a different pattern of expressing emotional distress than the older generation in China. Second, we used online recruitment of the sample, which has the advantage of being economical and fast but also the disadvantage of the self-selection effect of participants. For organizational reasons, the Chinese students did not receive financial compensation for participating in the study and this could lead to bias in the data. Furthermore, the scales were found to be partially measurement invariant and to fulfill the prerequisite for comparison of latent means by including only unbiased items, which can lead to shortcomings in the interpretation of cross-cultural comparisons.

Conclusions

In summary, our findings imply that the PHQ-9 and GAD-7 could be considered as construct invariant for students across Chinese and German cultures, with individual items showing cultural differences, and thus could be used for cross-cultural comparison. The PHQ-15 did not show scalar invariance. Full scalar invariance is generally difficult to find, especially across strongly contrasting cultures. This may be due to translation problems for certain items, cultural bias in understanding certain concepts and problems with the method for testing measurement invariance. Intercultural cooperation should be encouraged in order to improve the diagnostic instruments, which are more sensitive to culturally specific symptoms. Future studies may consider alternative approaches to test measurement invariance and more research into the influence of culture on shaping somatic awareness is required. Furthermore, it is necessary to examine the universality of the scales across diverse aged populations. Previous studies demonstrated that there are qualitative differences in the symptom presentation of depression and anxiety in younger and older adults, and that the different presentations of depression and anxiety in older adults are not fully assessed by the current measures of depression and anxiety [69, 70]. Our study is one of the first to investigate the measurement invariance of the frequently used PHQ-15, PHQ-9 and GAD-7 in large groups in China and Germany, which suggests that the constructs of a subject (e.g., somatic symptoms) could vary in its expression in different cultural contexts and that measurement equivalence of the measurement instrument should be ensured in comparative cultural studies.

Supplementary information

Supplementary information accompanies this paper at https://doi.org/10.1186/s12888-020-02859-8.

Additional file 1: Table S1. Items of the four first-order latent factors of the PHQ-15

Abbreviations

PHQ-15: Patient Health Questionnaire-15 Physical Symptoms; PHQ-9: Patient Health Questionnaire-9 Depression Symptoms; GAD-7: Generalized Anxiety Disorder 7-item scale; CFI: Comparative fit index; RMSEA: Root mean square error of approximation; SRMS: Standardized root mean residual; ΔCFI: The difference in CFI between the base model and the constrained model

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Authors' contributions

YZ and WR were responsible for the overall conception, design and analysis of this study. JX contributed to sample preparation. YZ made contribution to

the revising of statistical analysis and interpretation of the data and wrote the manuscript. WR provided critical feedback and helped shape the manuscript. All authors have read and approved the manuscript

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Availability of data and materials
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate
This study was carried out in accordance with the recommendations of "Ordnung für die Lokale Ethik-Kommission des Fachbereichs Psychologie vom 10.02.2010", die Lokale Ethik-Kommission (LEK) of University of Marburg, with written informed consent from all subjects. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by the 'Ethic-Committee of Department of Psychology of University Marburg' (reference number: 2016-19 k).

Consent for publication
Not applicable.

Competing interests
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Publisher's Note

Additional file 1

Additional file Table S1. Items of the four first-order latent factors of the PHQ-15

Item	Factor 1. Pain symptoms
2	Back pain
3	Pain in your arms, legs, or joints (knees, hips, etc.)
4	Menstrual cramps or other problems with your periods
5	Pain or problems during sexual intercourse
6	Headaches
	Factor 2. Gastrointestinal symptoms
1	Stomach pain
12	Constipation, loose bowels, or diarrhea
13	Nausea, gas, or indigestion
	Factor 3. Cardiovascular symptoms
7	Chest pain
8	Dizziness
9	Fainting spells
10	Feeling your heart pound or race
11	Shortness of breath
	Factor 4. Fatigue symptoms
14	Trouble sleeping
15	Feeling tired or having low energy

7.3 Anhang 3. Studie 3.

A cultural-value-oriented online intervention to improve attitudes toward psychotherapy in China and Germany

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Abstract

Background: Interventions that are focused on reducing stigma associated with mental disorders are implemented to promote help-seeking behavior. We examined whether cultural-value-oriented interventions improve attitudes toward psychotherapy.

Method: An online intervention was conducted in samples of Chinese students (n = 196) and German students (n = 408). Participants were randomly assigned either to a collectivistic- or an individualistic-value-oriented intervention. Attitudes toward psychotherapy and cross-cultural differences were examined.

Results: The attitudes of the students in both cultural groups were improved by the collectivistic- and individualistic-value-oriented interventions; however, there was no interaction effect for the type of intervention × measurement time × country (F (1, 600) = .255, p = .641). Compared with German students, Chinese students showed less positive attitudes toward psychotherapy and benefited more from both interventions.

Conclusion: Both cultural-value-oriented interventions are helpful in improving attitudes toward psychotherapy, but no differences between individualistic- versus collectivistic-oriented interventions could be detected. The role of bicultural value in China and Germany and alternative approaches to describing cultural dimensions is discussed.

Keywords: attitude toward psychotherapy, intervention, collectivism, individualism, cross-cultural study

1. Introduction

While every third person with depressive symptoms in Germany receives psychotherapeutic or psychiatric help within a year (Rommel, Bretschneider, Kroll, Prütz, & Thom, 2017), Chinese people seek professional help rather late, mostly when the peak of the crisis has already arrived (Yeung, Irvine, Ng, & Tsang, 2017). Recent studies on the rates of service utilization of professional psychological help across China are lacking. Studies have found that only 4.5% of patients with mental disorders in the city of Tianjin, a coastal metropolis in China, and only 7.9% of people with depressive symptoms in the metropolis Wuhan reported that they have sought help in mental healthcare (Fang et al., 2019; Yin, Wardenaar, Xu, Tian, & Schoevers, 2019). Earlier intercultural studies have also shown that the use of professional psychological help was significantly lower for Asians, including Chinese individuals, than for persons from Western countries (Kim, 2007; Leong, Chang, & Lee, 2007; Wang et al., 2007). In addition to the non-cultural reasons for the low use of professional help, such as underdevelopment of psychiatric health, services especially in rural areas of mainland China (Wang et al., 2007), cultural factors (stigma, attitude toward mental illness, cultural values, etc.) also play an important role (Jimenez, Bartels, Cardenas, & Alegria, 2013; Kung, 2004).

So far, several interventions have been carried out to improve public attitudes toward mental illness and help-seeking in the public populations (Clement et al., 2013; Evans-Lacko et al., 2013; Hadlaczky, Hökby, Mkrtchian, Carli, & Wasserman, 2014; Kohls et al., 2017; Schomerus et al., 2016). Most of these interventions have been carried out in North America, Australia and Europe (Clement et al., 2013; Corrigan, Morris, Michaels, Rafacz, & Rüsch, 2012; Hadlaczky et al., 2014; Xu et al., 2018). In Asian countries, such as China, there have been only a few such public population-oriented interventions (Xu et al., 2018), although the potential need for psychological professional help is enormous (Huang et al., 2019; Xiang,

Zhang, Wang, Zeng, & Ungvari, 2019), and the task of improving attitudes toward psychotherapy and help-seeking is of great importance. The interventions that have been already carried out in the western countries cannot simply be applied without adapting to the culture in China, because despite common ground, there are also different reasons in the various cultural circles as to why an individual does not seek professional psychological help.

Therefore, a novel approach is in pressing need, and such a novel approach could be a culturally adapted value-oriented intervention. Although the history of psychotherapy in China is comparatively short and the mental health care system has grown rapidly in the past thirty years (Zhao, 2017), Chinese traditional cultural values still have an important impact on the use of professional psychological help (Chen & Mak, 2008; Kung, 2004). Cultural researchers assumed that the self-concept of the individual in a collectivistic society like China is related to other people in their social context and that interpersonal harmonies, social obligations and interdependence are emphasized more than in western cultures (Collins et al., 2011; Ng & James, 2013; Shea, Yang, & Leong, 2010). However, psychotherapy in the modern sense is mainly developed in western countries, which has been strongly influenced by values such as optimism, individualism and encouragement for personal change (Draguns, 2008). In contrast, values such as harmony, collectivism and temperance are emphasized in Chinese indigenous therapy (Liu & Leung, 2010). In order to ensure the applicability of western psychotherapy in a Chinese cultural context, it should be adapted to Chinese culture. Such a cultural adaptation could also be applied to the interventions to improve attitude toward psychotherapy.

Cultural value-oriented intervention is based on the theory of reasoned action (Fischbein & Ajzen, 1975), which explains the connection between attitudes and behavior. A person's actual behavior is assumed to be determined by their intention of behavior, which results on the one hand from the personal attitude to the considered behavior, and on the other

hand from subjective norms that a person perceives. According to this theory, we could assume that if a person is aware of the possible "benefits" of psychotherapy that addresses their subjective values (such as cultural values), it could lead to a change in attitude toward help-seeking behavior in the case of mental illnesses.

This kind of cultural value-oriented intervention could not only provide a model for Asian countries like China, but could also complement the existing interventions in western countries like Germany. According to Hofstede's individualism index (https://www.hofstede-insights.com/product/compare-countries/), China has an individualistic score of 20, which is considered as typical for a collectivistic culture, while Germany has an individualistic score of 67, which is often seen to represent an individualistic culture. The main difference between a collectivistic and an individualistic culture is how people define themselves (Armstrong & Swartzman, 2001). Subjective values in the collectivistic cultural context include, for instance: clearer identity-finding in the social network to which one belongs; and maintaining harmony in the interpersonal relationship and avoiding conflicts. In the individualistic cultural context, the values would be defining oneself as a unique individual and emphasizing self-realization and self-development (Triandis, 1988). However, both Chinese society and German society are changing, although China's development has been significantly faster in recent decades. Only a few studies (Ma, Hu, & Gocłowska, 2016) have examined the current Chinese and German cultural values, especially among the younger generation.

In the present study, we measured the current status of collectivism and individualism for Chinese and German students, using Trandis and Gelfand's (1998) Individualism and Collectivism Scale, and we compared the attitudes of the Chinese and German students toward psychotherapy before and after an online cultural value-oriented intervention (collectivism-orientated or individualism-orientated). Also, students' evaluations of the importance of psychotherapy goals are of interest. The following hypotheses were tested in

the present study: 1) The attitude toward psychotherapy of Chinese students would be improved by a collectivism-oriented intervention, while the attitude among German students would be improved instead by an individualism-oriented intervention; 2) Chinese students have stronger collectivistic values than German students, and German students have stronger individualistic values than Chinese students; and 3) Chinese students appreciate collectivistic therapy goals more than German students, and German students appreciate individualistic therapy goals more than Chinese students.

2. Methods

2.1 Sample

We conducted an online experiment with German students at the University of Marburg in Germany and Chinese students at the Zhengzhou University of Light Industry in China. Data collection started in May 2018 and lasted for 5 months. German students at the University of Marburg (total number of students: 26,355) were contacted by email and participation in a raffle for 5 × 20 Euro Amazon vouchers was offered for participation in the study. Ultimately, 223 German students completed the entire survey. After the application of exclusion criteria (without a migration background, i.e. those who were born and have grown up in Germany; confirming a minimum processing time for the survey of 7 min.), the number of German students whose data could be used for analysis decreased to 196. Chinese students at the Zhengzhou University of Light Industry (total number of students: 24,000) were recruited on WeChat, a popular social media platform used by most Chinese individuals, and the participants could be entered into a raffle of 50 × 15 Yuan, which was sent online by a Red Envelope, a virtual envelope function in WeChat, where the money is given to recipients as a gift. In total, 525 Chinese students finished the entire survey. According to the same exclusion criteria as in the German sample, the number of Chinese students whose data were usable for analysis decreased to 408. The demographic characteristics of the participants are

summarized in Table 1. The study was approved by the Ethics Committee of the Faculty of Psychology of the University of Marburg (approval number: 2018-31k).

2.2 Intervention

In both of the cultural groups, participants were randomly assigned to one of the two different intervention conditions: collectivistic value-oriented intervention and individualistic value-oriented intervention. The intervention was presented as a two-minute video. The video was presented in text format, and it first introduced what psychotherapy is and when it is required. It clarified that psychotherapy can help reduce mental symptoms and restore the quality of life. Subsequently, seven collectivistic- or seven individualistic- oriented goals were introduced, which can be achieved with psychotherapy in the case of mental illnesses. These therapy goals were derived from the constructs of collectivism and individualism by Hofstede (1983) and Triandis and Gelfand (1998). Examples of the individualistic value-oriented goals of psychotherapy were formulated as: “The following goals can be achieved with psychotherapy: to gain a clearer individuality as a unique individual,” “to develop the feeling of having more control over your own life” and “to express your feelings toward others more confidently.” Examples of the collectivistic value-oriented goals were “to maintain more harmony in interpersonal relationships and avoid conflicts,” “achieve better adaptation to given social framework conditions” and “gain a better understanding of your family and the ability to give them more support.” For the details of the interventions, see Appendix A.

2.3 Scale of Attitude toward Psychotherapy

Before and after the intervention (Time 1 and Time 2, respectively), all of the participants completed the 5-item Scale of Attitude toward Psychotherapy (SAP), which included items such as “I think people with mental illness can benefit from psychotherapy” and “My basic attitude toward psychotherapy is skeptical.” For other items on the scale, see supplementary Table S1. To enable participants to express their opinions more precisely,

answers were given on a sliding scale from 0 = don't agree at all to 100 = totally agree. Higher scores indicate a more positive attitude toward psychotherapy. Principal component factor analysis revealed one factor in both of the German and Chinese students' groups with an eigenvalue > 1 (Chinese sample: eigenvalue = 2.72, explained variance 54.36 %; German sample: eigenvalue = 2.35, explained variance 47.05%). All of the factor loadings were above .45 (supplementary Table S5). The items of the scale showed an acceptable internal consistency in the Chinese sample (Cronbach's alpha = .77) and a slightly acceptable internal consistency in the German sample (Cronbach's alpha = .68). We assumed that a larger sample size of the German sample (N = 196) could improve the internal consistency. Confirmatory factor analyses in single samples and measurement invariance testing were conducted to test the cross-cultural equivalence. The results demonstrated that the SAP had partial scalar measurement invariance (CFI = .980; RMSEA = .058, 90% CI [.027 - .088]; SRMR = .070; ΔCFI = .009) and the prerequisite for an intercultural comparison is fulfilled (supplementary Table S9).

2.4 Individualism and Collectivism Scale

The individualistic and collectivistic values were measured by the widespread 16-item Individualism and Collectivism Scale (ICS) developed by Triandis and Gelfland (1998), a scale which measures four dimensions of collectivism and individualism (Singelis, Triandis, Bhawuk, & Gelfand, 1995): vertical collectivism ("*perceiving the self as a part of a collective and accepting inequalities within the collective*"); horizontal collectivism ("*perceiving the self as a part of the collective, but seeing all members of the collective as the same*"); vertical individualism ("*the conception of an autonomous individual and acceptance if inequality*"); and horizontal individualism ("*the conception of an autonomous individual and emphasis on equality*"). Each dimension consists of four items, and all items are answered on a 9-point scale from 1 = "never or definitely no" and 9 = "always or definitely yes." The subscales

showed acceptable internal consistency, with Cronbach´s alpha values between .64 and .83 in samples from South Africa and Switzerland (Györkös et al., 2013). Our present study showed acceptable internal consistency of the subscales in the German sample (Cronbach's alpha between .70 and .76) and from questionable to acceptable internal consistency in the Chinese sample (Cronbach's alpha between .57 and .71) (supplementary Table S4). The four factors of the questionnaire could be confirmed. However, the factor loadings were indicated not to be equal between the two cultural groups (supplementary Table S6). Hence, no baseline model for the analysis of measurement invariance between the cross-cultural groups could be established. Nevertheless, for exploratory reasons, we used the scale for the analysis of the cultural differences despite its unsatisfactory quality criteria in the Chinese sample and the lack of intercultural measurement invariance.

2.5 Scale of Culture-Oriented Therapy Goals (SCOTG)

The subjective perception of the importance of the culture-oriented therapy goals introduced in the intervention was measured by a 7-item scale, the Scale of Culture-Oriented Therapy Goals (SCOTG). The participants were asked how important the respective therapy goals would be assessed by them if they went to psychotherapy. Answers were given on a sliding scale from 0 = "not important at all" to 100 = "absolutely important." For this, two versions of scales were used (collectivistic value-oriented and individualistic value-oriented). The subjective perception of the importance of the collectivistic value-oriented therapy goals was measured among the participants who received a collectivistic value-oriented intervention. The other version was used among participants who received the individualistic value-oriented intervention. Principal component factor analysis revealed one factor in both of the cultural groups and on both versions of the scale, with eigenvalues > 1 (supplementary Table S7 and S8). The items on the scale in the two versions showed good internal consistency in both of the culture groups (supplementary Table S4). Confirmatory factor

analysis (CFA) showed that the measurement models of the both versions of SCOTG had a poor fit for the group of German students (collectivistic value-oriented version: $\chi^2 = 36.010$, $df = 14$, $p < .001$; CFI = .888; RMSEA = .127, 90% CI [.077, .179]; SRMR = .065; individualistic value-oriented version: $\chi^2 = 51.587$, $df = 14$, $p < .001$; CFI = .841; RMSEA = .165, 90% CI [.118, .214]; SRMR = .067) and a better fit for Chinese students (collectivistic value-oriented version $\chi^2 = 38.543$, $df = 14$, $p < .001$; CFI = .966; RMSEA = .091, 90% CI [.057, .126]; SRMR = .033; individualistic value-oriented version: $\chi^2 = 66.373$, $df = 14$, $p < .001$; CFI = .945; RMSEA = .139, 90% CI [.106, .173]; SRMR = .049). As was the case for the ICS scale, no baseline model for the analysis of cross-cultural measurement invariance could be established. But for exploratory reasons, we used the scale for the analysis of the cultural differences despite the lack of intercultural measurement invariance.

2.6 Translation

German and Chinese versions of the interventions and the scales were constructed using the customary translation-back-translation method recommended by Brislin (1970). First, the German version of the interventions and scales developed in this study was translated into Chinese, and then the Chinese version was translated back into German. The translators were native Chinese speakers who had excellent German reading and writing skills. Subsequently, the English version of the ICS (Triandis & Gelfland, 1998) was translated into Chinese and German, and then the Chinese and German versions were translated back into English. The translators were native Chinese and German speakers who had excellent English reading and writing skills. The arising semantic differences were discussed, and the final versions of the translation were agreed upon. The translated Chinese and German versions of the scales can be viewed in the part of supplemental material (supplementary Table S2 and S3).

2.7 Statistical analysis

SPSS (version 25, IBM, Armonk, USA) was used for statistical calculations. To compare age and number of semesters between the Chinese and German students, independent *t*-tests were conducted. A Chi-square test was used to compare sex distribution. The average treatment effects of the collectivistic value-oriented intervention and the individualistic value-oriented intervention in both cultures – that means the comparisons of the change in attitudes toward psychotherapy from Time 1 to Time 2 – were analyzed by using 2 × 2 × 2 mixed repeated measures design analyses of variance (repeated measure ANOVA), with the within-subjects factor measurement time (before/after the intervention) and the between-subjects factor country (China/Germany) and the type of intervention (individualistic value-oriented or collectivistic value-oriented). The importance of the cultural value-oriented therapy goals in the two culture groups and under the two intervention conditions was compared using 2×2 mixed-design analyses of variance (ANOVA) with the factors country and intervention. The scores of the four dimensions of the ICS were analyzed for the comparison between the two culture groups by using a *t*-test and for the comparison within the respective cultural group by using a one-way ANOVA.

3. Results

3.1 Demographics

The demographics characteristics of the participants are displayed in Table 1. Mean age, gender ratio and the mean number of semesters studied at university differed significantly among the Chinese and German samples. We investigated the influence of these sociodemographic variables on the individual items used in the analyses. The low median correlation between these sociodemographic factors and the individual items showed that there were hardly any effects of the sociodemographic factors on the items (median correlation between items and mean age: -.03; between items and mean number of semesters: .02; between items and gender: .02).

[Table 1 to be inserted here]

3.1 Effects of the interventions on attitude toward psychotherapy

The 2 × 2 × 2 ANOVA showed a main effect for measurement time, F (1, 600) = 78.279, $p < .001$, partial $\eta^2 = .115$ (participants have a more positive attitude toward psychotherapy after the intervention than before), and a main effect for country, F (1, 600) = 13.851, $p < .001$, partial $\eta^2 = .023$ (German students have a more positive attitude toward psychotherapy than Chinese students), but it showed no main or interaction effect for type of the intervention, F (1, 600) = .124, $p = .852$ (both of the interventions have improved the attitude toward psychotherapy). There was an interaction effect of measurement time × country, F (1, 600) = 13.141, $p < .001$, partial $\eta^2 = .021$ (the improvement in attitude toward psychotherapy was greater in the Chinese group than in the German group), but no interaction effect of measurement time × intervention, F (1, 600) = .151, $p = .698$ or measurement time × country × intervention, F (1, 600) = .255, $p = .641$. See Figure 1 for details.

[Figure 1 to be inserted here]

3.2 Differences in perception of the importance of cultural value-oriented therapy goals between groups

The 2 × 2 ANOVA showed a main effect for country F (1, 600) = 37.54, $p < .001$, partial $\eta^2 = .59$, and intervention F (1, 600) = 9.69, $p < .01$, partial $\eta^2 = .016$. It did not show an interaction effect of country × intervention, F (1, 600) = 45942.46, $p = .128$, partial $\eta^2 = .004$. LSD post-hoc tests revealed that for Chinese students, collectivistic value-oriented therapy goals (674.77 ± 125.33) were evaluated as more important than individualistic therapy goals (655.34 ± 151.25), and the same was true for the German students, as well (collectivistic therapy goals: 618.47 ± 136.08; individualistic therapy goals: 561.77 ± 154.33).

Chinese students appreciated collectivistic therapy goals as well as individualistic therapy goals more than the German students did. See Figure 2 for details.

[Figure 2 to be inserted here]

3.3 Individualistic and collectivistic characteristic of the participants

One-way ANOVA showed significant differences of the scores among the four dimensions (HI, VI, HC, VC) of the ICS in both of the culture groups (Chinese sample: F (3, 1221) = 134.01, p =.000, partial η^2 = .25; German sample: F (3, 585) = 132.93, p =.000, partial η^2 = .41). In both of the culture groups, LSD post-hoc analysis revealed a significant difference ($p < .001$) of the scores among all the four dimensions except the scores between the dimension HI und HC in the Chinese group. Chinese students achieved the highest mean scores on the VC dimension (29.00 ± .23) and the lowest scores on the VI dimension (23.29 ± .25). In between are the mean scores of HI (25.51 ± .25) and HC (25.76 ± .25). In the German sample, the highest mean score was on the dimension HC (27.23 ± .35), and the lowest score was on the dimension VI (16.89 ± .43). The mean scores of the dimension HI (25.01 ± .41) and VC (22.87 ± .45) were between HC and VI. See Figure 3 for details.

[Figure 3 to be inserted here]

In the cross-cultural comparison, there was a statistically significant difference of the mean scores of the dimension VI between the Chinese students and the German students, with a lower mean score of 6.40 (95%-CI [5.42, 7.38]) for the German group (t (602) = 12.86, $p < .001$). The results also showed a statistically significant higher score on the dimension of VC for the Chinese group (mean difference 6.13 (95%-CI [5.14, 7.12], t (602) = 12.18, $p < .001$). The scores of HI between the two groups were not significantly different (HI: mean difference .50 (95%-CI [.44, 1.44], t (602) = 1.05, p = .15). Only on the dimension of HC, the

German group showed a statistically significant higher score than the Chinese group (mean difference 1.48 (95%-CI [.64, 2.32], t (602) = 3.48, $p < .001$.). See Figure 3 for details.

4. Discussion and Conclusions

In the present study, we found that (Hypothesis 1) the attitudes toward psychotherapy of the students in both cultural groups were improved by the collectivistic and the individualistic value-oriented intervention and no differences between these two interventions in Chinese and Germany students' groups could be detected. Before and after the intervention, German students showed more positive attitudes toward psychotherapy than Chinese students, and Chinese students benefited from both interventions more than German students did. We also found that (Hypothesis 2) the Chinese students endorsed a high level of vertical collectivism, but also a high level of horizontal collectivism and horizontal individualism; German students endorsed a high level of horizontal collectivism, but also a high level of horizontal individualism and relatively low vertical individualism. Furthermore, (Hypothesis 3) both Chinese and German students evaluated collectivistic value-oriented therapy goals more important than individualistic therapy goals. Chinese students appreciated collectivistic therapy goals as well as individualistic therapy goals more than the German students did.

4.1 Culture-oriented intervention to improve attitudes toward psychotherapy

Thus far, many anti-stigma interventions that are more deficit-oriented and focused on reducing obstacles like the stigma associated with mental disorders or help-seeking have been implemented to promote help-seeking behavior (Corrigan et al., 2012; Griffiths, Carron-Arthur, Parsons, & Reid, 2014). In our study, we found that cultural value-oriented intervention, which focused on the benefits of psychotherapy and the knowledge of therapy goals that emphasize cultural values, is also useful to improve the attitude toward psychotherapy. Moreover, the informing of achievable goals of psychotherapy would be a good additional variant to the most commonly used intervention, such as education aimed to

increase knowledge and understanding of mental illness, as well as intervention characterized by face-to-face contact (Corrigan et al., 2012; Xu, Huang, Kösters, & Rüsch, 2017). Additionally, resource-oriented intervention, such as cultural value-oriented intervention, could associate potential help-seeking with positive emotions. Help-seeking may not be seen as an individual, personal weakness, and thus self-esteem could remain unharmed. However, we have not found differences between these two interventions in the respective cultural groups. The reason may be that there is no substantial difference between Chinese and German students in terms of cultural tendencies toward collectivism or individualism. The hypothesis and intervention of our study are based on Hofstede's thus far still influential cultural dimensions theory (Hofstede, 1980). There are alternative ways to describe and distinguish cultural differences (Helfrich, 2019), such as cultural dimensions "survival and self-expression values" vs. "traditional and secular-rational values", according to the World Values Survey (Inglehart & Welzel, 2010). It could be more appropriate to investigate cultural-values-based interventions to improve attitudes towards psychotherapy because longitudinal measurement of the development of values in the respective countries have been repeatedly carried out, and thus quite up-to-date results can be recorded.

4.2 Bicultural value in China and Germany

A remarkable finding of our study was that the Chinese students are not only characterized by strong vertical collectivism, but also by strong horizontal individualism, while German culture includes high horizontal collectivism and horizontal individualism, but low vertical individualism. A study conducted by Tang, Werner and Karwowski (2016) was also found that German culture is highly characterized by strong collectivism. This contradicts the typical perception of these two cultures that collectivism is the dominant cultural orientation in China and individualistic culture is typical for Germany (Hofstede, n.d.; Hofstede, 1993; Hofstede & Bond, 1988). Studies from the past two decades have found that

individualistic orientation has developed in China due to the western influence in the recent social modernization, and therefore there coexists an individually- and socially-oriented Chinese bicultural self (Lu, 2008; Ma et al., 2016). Our results could confirm these findings, and we assumed that such a bicultural model would also apply for Germany, which – in contrast to members of other developed, capitalist societies – has shown positive connotations to collectivism (Neaman, 1990). This bicultural value in China and Germany could be the reason that collectivistic and individualistic intervention have improved attitudes toward psychotherapy in both cultural groups, and that the students from both cultures assessed the collectivism-orientated therapy goals as important as the individualism-orientated therapy goals. Furthermore, this study indicated that the bicultural view should be considered in the psychotherapy for the Chinese and German student population. It is necessary to integrate the values of collectivism and individualism into psychotherapy, rather than using single, typically individualistic or typically collectivistic cultural values.

4.3 Attitude toward psychotherapy in China and Germany

Similarly to previous studies, which found that Chinese individuals who are living in western countries have a more negative attitude toward psychotherapy than westerners (Mellor, Carne, Shen, McCabe, & Wang, 2013; Papadopoulos, Foster, & Caldwell, 2013; Parker, Chan, & Tully, 2006; Yang et al., 2013), we also found this relative negative attitude toward psychotherapy for mainland Chinese individuals, even among educated Chinese people who were assumed to have both traditional and western values (Kolstad & Gjesvik, 2014). Our finding is also in consistent with the results of Kim's study (Kim, 2007), which showed that cultural values such as collectivism and individualism are not related to professional help-seeking attitudes, because both collectivism and individualism could be found for German students, and those students have more positive attitudes toward psychotherapy than Chinese students. Compared to westerners, Chinese people have more

cultural and non-cultural obstacles to seeking western psychotherapy (Liu & Leung, 2010). There is no doubt that there is still plenty of room to improve the perception and use of psychotherapy among Chinese people. Our study has found that cultural value-oriented intervention is helpful to improve the attitudes toward psychotherapy. It may improve help-seeking behavior in the case of mental illnesses or before the mental illness worsens. Future research could examine whether this cultural value-oriented intervention could also reduce social stigma and self-stigma of seeking professional psychological help.

4.4 Limitations

Our study has several limitations: First, we tried to design the intervention taking into account cultural values, but it is not clear whether the intervention is "culturally" specific enough for the respective cultural groups. Perhaps the core cultural differences between China and Germany are expressed in other cultural dimensions, rather than a distinction between collectivism and individualism. Second, the samples we used were limited to students from China and Germany; thus, the results indicate the effectiveness of cultural-value-oriented interventions in a young generation and cannot be generalized to the general population of the two cultures. Third, the ICS and the SCOTG used in our study lack intercultural measurement invariance, which is the typical limitation of most intercultural studies. The intercultural effects of the intervention may not have been found because the questionnaires are not culturally sensitive enough. Nevertheless, this study offers an exploratory perspective of this area. Fourth, we did not carry out a follow-up study, and the long-term effects of the intervention are still unknown.

4.5 Conclusion

Our study found no differences between individualistic versus collectivistic oriented interventions in both of the cultural groups. Collectivist value-oriented intervention and individualistic value-oriented intervention to improve attitudes toward psychotherapy showed

positive effects in both cultures, and people in China in particular will benefit more from such a culture-oriented intervention. We have also found the coexistence of collectivisms and individualisms in both Chinese and German students. Future research could focus on the long-term effects of these interventions, the development of a questionnaire to measure collectivism and individualism with sufficient intercultural measurement invariance, and interventions based on other cultural dimension theories.

Appendix A

A: Collectivistic value-oriented intervention

Text in Video: Psychotherapy: a way to strengthen yourself

Psychotherapy is a treatment of mental illnesses using scientifically recognized procedures, methods and techniques. Psychotherapy is advisable when psychological problems can no longer be solved alone or with the help of family or friends, lead to symptoms of illness and the everyday demands of life can no longer be met.

Psychotherapy not only helps to reduce the current state of suffering, anxiety or insecurity. It also helps restore quality of life and provides the ability to better adapt to everyday challenges. As a result, clients will be more resilient in future situations and have a lower risk of relapse. Numerous scientific studies on psychotherapy have proven the success of the therapy. The following goals could be achieved through psychotherapy:

- reduce symptoms of a mental disorder (fear, insecurity, depressed mood, etc.)

- gain a clearer identity as a unique individual

- develop the feeling of being able to determine one's own life more

- have more strength to realize themselves and to develop their own personality

- gain the ability to take care of themselves better

- deal more closely with what you want

- Express your feelings toward others more confidently

- Feel more security in situations that are currently difficult for you

B: Individualistic value-oriented intervention

Text in Video: Psychotherapy: a way to find harmony between "me" and "my environment"

Psychotherapy is a treatment of mental illnesses using scientifically recognized procedures, methods and techniques. Psychotherapy is advisable when psychological problems can no longer be solved alone or with the help of family or friends, lead to symptoms of illness and the everyday demands of life can no longer be met.

Psychotherapy not only helps to reduce the current state of suffering, anxiety or insecurity. It also helps restore quality of life and provides the ability to better adapt to everyday challenges. As a result, clients will be more resilient in future situations and have a lower risk of relapse. Numerous scientific studies on psychotherapy have proven the success of the therapy. The following goals could be achieved through psychotherapy:

- reduce symptoms of a mental disorder (fear, insecurity, depressed mood, etc.)

- clearer identity-finding in the social network to which you belong

- maintain more harmony in the interpersonal relationship and avoid conflict

- gain a better understanding of your family and the ability to give them more support

- To learn how to find compromise in the conflict situation and how to reach consensus

- achieve better adaptation to given social framework conditions

- Achieve personal goals more successfully, to bring pride in the family and to contribute to society

- To take things as they come.

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://...

Authors' contributions: YZ and WR were responsible for the overall conception, design and analysis of this study. YY contributed to sample preparation. YZ made contribution to the revising of statistical analysis and interpretation of the data and wrote the manuscript. WR provided critical feedback and helped shape the manuscript.

Competing interests: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Table 1

Sociodemographic characteristics of participants (n =604)

	Collectivist Intervention (n = 310)		Individualistic Intervention (n = 294)		*p*-value	Effect size
	China (n = 213)	Germany (n = 97)	China (n = 195)	Germany (n = 99)		
Sex [female] (%)	105 (49.3 %)	74 (76.3 %)	96 (49.2 %)	68 (68.7 %)	p < .001	Cramér's *V* = .73
Age in years, (*M* ± *SD*; range)	19.76 ± 1.28 16-24	23.69 ± 4.20 18-41	19.88 ± 1.59 16-31	23.67 ± 3.94 18-41	p < .001	Cohen's *d*= 1.24
Semester, (M ± SD; range)	3.47 ± 1.61 1-8	5.94 ± 4.22 1-26	3.63 ± 2.40 1-26	5.66 ± 3.95 1-20	p < .001	Cohen's *d*= 0.81

Note. The comparisons of sexes were calculated using the chi-squared test. The age and number of semester comparisons were calculated using the *F*-test.

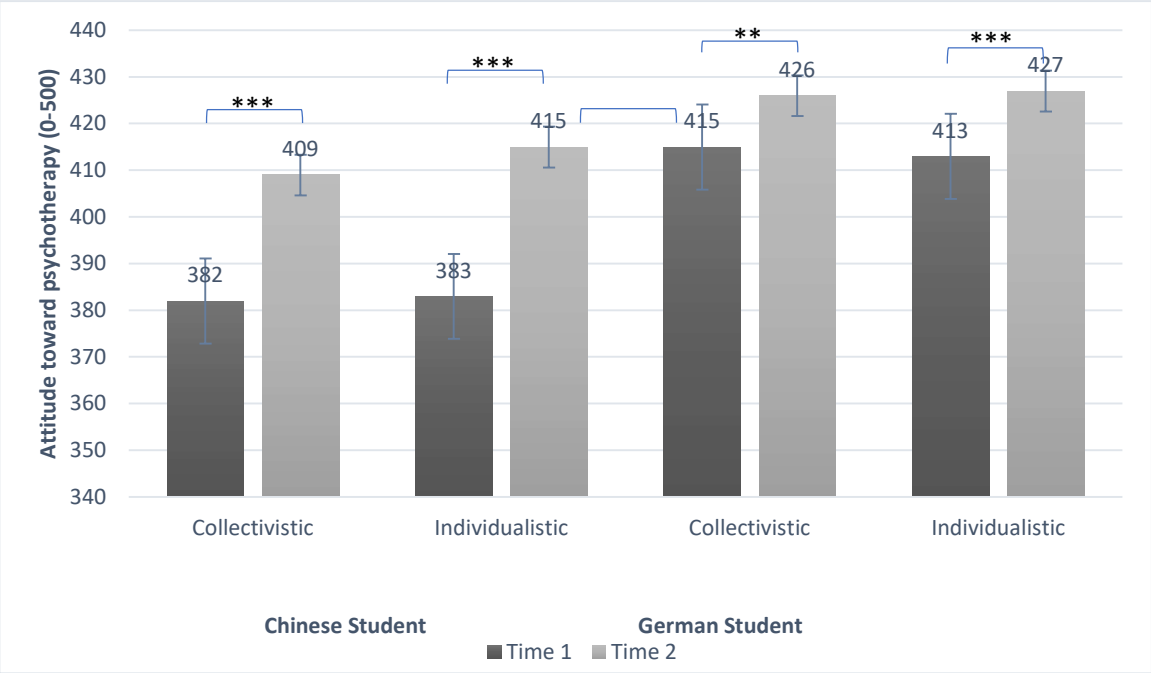

Figure 1. Treatment effects of the two interventions on the mean score of attitudes toward psychotherapy in the Chinese students' group and the German students' group. Higher scores indicate a more positive attitude toward psychotherapy. Brackets indicate significant post-hoc tests, **p < .01 ***p < .001. *(NB EDITOR: color should be used for this figure in print.)*

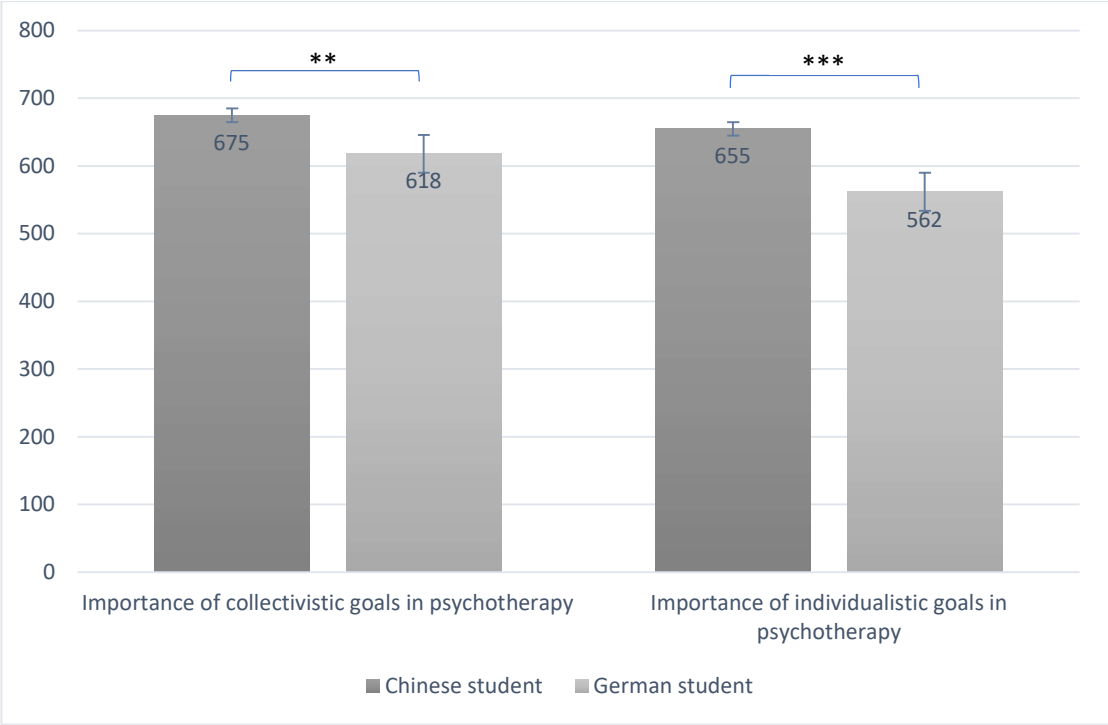

Figure 2. Differences in the importance of collectivist and individualistic goals in psychotherapy between groups. Higher scores indicate higher importance regarding cultural value-oriented therapy goals. Brackets indicate significant post-hoc tests, **p < .01 ***p < .001. *(NB EDITOR: color should be used for this figure in print.)*

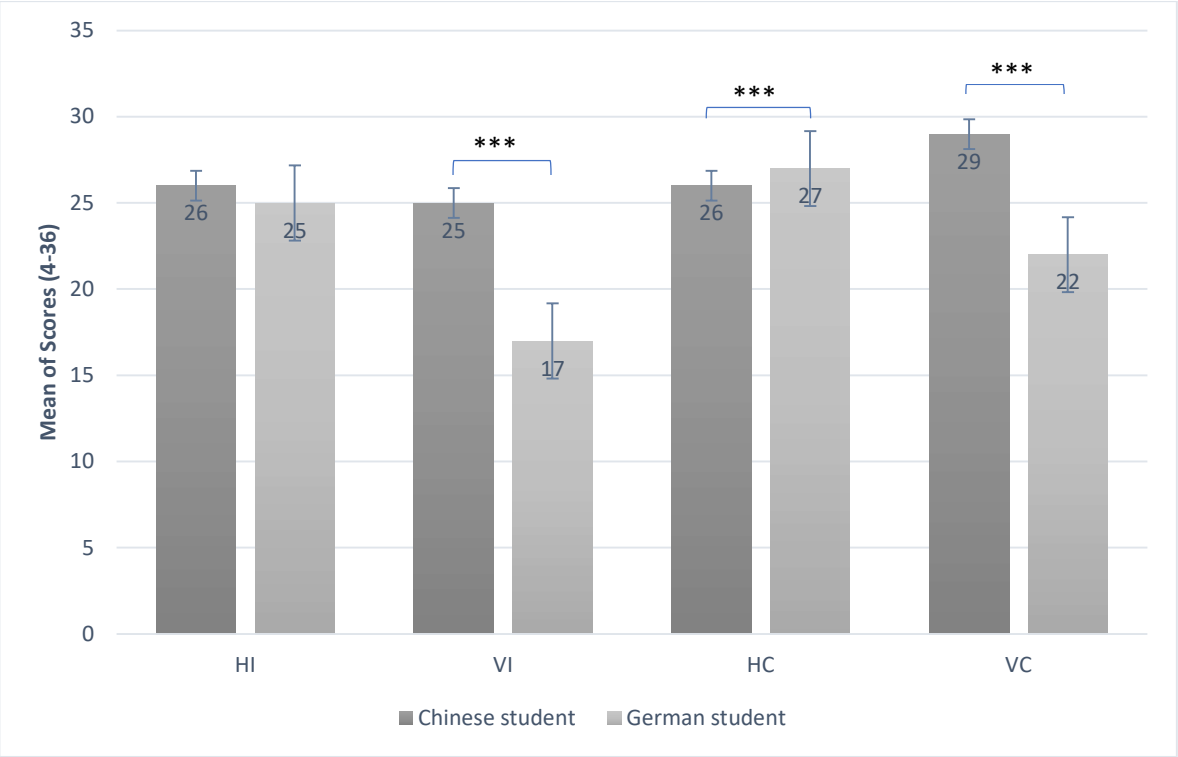

Figure 3. Individualistic and collectivistic characteristic of the participants. HC = Horizontal Collectivism, HI= Horizontal Individualism, VC = Vertical Collectivism, VI = Vertical Individualism. ***p < .001. (NB EDITOR: color should be used for this figure in print.)

Supplemental Table S1. Scale of Attitude toward Psychotherapy (SAP) and Scale of Culture-oriented Therapy Goals (SCOTG)

Item	Scale of Attitude toward Psychotherapy
1	I think people with mental illness can benefit from psychotherapy.
2	The effects of psychotherapy are long-term.
3	If I have a mental illness, I will take psychotherapy.
4	My basic attitude towards psychotherapy is skeptical.
5	I assume that a psychotherapist has learned to behave correctly and helpfully towards someone who is mentally ill.
	Scale of Culture-oriented Therapy Goals
	Individualism-oriented
1	gain a clearer identity as a unique individual
2	develop the feeling of being able to determine your own life more
3	have more strength to realize themselves and to develop their own personality
4	gain the ability to take care of themselves better
5	deal more with what you want yourself
6	Express your feelings towards others more confidently
7	Feel more security in situations that are currently difficult for you
	Collectivism-oriented
1	clearer identity finding in the social network to which you belong
2	Maintain more harmony in the interpersonal relationship and avoid conflict
3	gain a better understanding of your family and the ability to give them more support
4	To learn how to find compromise in the conflict situation and how to reach consensus
5	achieve better adaptation to given social framework conditions
6	Achieve personal goals more successfully, to bring stotz in the family and what to contribute to society
7	To take things as they come.

Supplemental Table S2. Chinese Version of the Scale of Attitude toward Psychotherapy, Individualism and Collectivism Scale and Scale of Culture-oriented Therapy Goals

Item	Scale of Attitude toward Psychotherapy
1	我认为心理疾病患者可以从心理治疗中受益。
2	心理治疗的效果是长期的。
3	如果我患有心理疾病，我会去做心理治疗。
4	我对心理治疗是抱着怀疑态度的。
5	我认为心理医生知道怎么有效地帮助那些内心痛苦的人。
	Individualism and Collectivism Scale
	Horizontal Individualism
1	我更愿意信赖自己而不是别人。
2	我大部分时间都依靠自己; 我很少依靠别人。
3	我经常做 “我自己的事“。
4	我独立于他人的个体身份，对我来说非常重要。
	Vertical Individualism
5	比其他人更好地完成工作，这对我很重要。
6	获胜就是一切。
7	竞争是自然法则。

8	当别人比我做的好时，我会感到紧张和不安。
	Horizontal Collectivism
9	如果同事/同学获奖，我会感到自豪。
10	我同事/同学的感受对我非常重要。
11	我很乐意和他人待在一起。
12	我很喜欢和他人一起合作。
	Vertical Collectivism
13	父母和孩子的关系必须尽可能地保持紧密。
14	照顾家人是我的责任，尽管我会为此付出一些代价。
15	无论代价是什么，家人都应该团结起来。
16	尊重团队的选择对我来说很重要。
	Scale of Culture-oriented Therapy Goals
	Individualism-oriented
1	自己作为独特个体的身份将更加清晰
2	能够感觉到自己可以主宰自己的人
3	有更多的力量去自我实现，发展自己的个性
4	获得更好地照顾自己的能力
5	更好地把精力投入到那些自己想做的事
6	更自信地表达自己的意见和描述自己的感受
7	更有信心地面对困难
	Collectivism-oriented
1	在自己所处的圈子里更清楚地认识自己的位置
2	建立和谐的人际关系，避免冲突
3	更好地理解家人，知道怎样更好地支持他们
4	学会如何在人际冲突中与他人做出妥协并达成共识
5	更好地适应自己所属的社会环境
6	成功地实现个人目标，让家人为自己骄傲，同时更好地服务于社会
7	提高心理承受能力

Supplemental Table S3. German Version of the Scale of Attitude toward Psychotherapy, Individualism and Collectivism Scale and Scale of Culture-oriented Therapy Goals

Item	Scale of Attitude toward Psychotherapy
1	Ich denke, dass Menschen mit psychischen Störungen von einer Psychotherapie profitieren können.
2	Der Erfolg von Psychotherapie bei einer psychischen Störung ist langfristig.
3	Falls ich unter einer psychischen Störung leiden würde, würde ich eine Psychotherapie machen.
4	Meine Grundeinstellung zur Psychotherapie ist skeptisch.
5	Ich gehe davon aus, dass ein/e Psychotherapeut/in gelernt hat, sich einem seelisch Notleidendem gegenüber richtig und hilfreich zu verhalten.
	Individualism and Collectivism Scale
	Horizontal Individualism
1	Ich verlasse mich lieber auf mich selbst als auf andere.
2	Meistens verlasse ich mich auf mich selbst; ich verlasse mich kaum auf andere.
3	Ich mache oft “mein eigenes Ding”.
4	Meine eigene Identität, unabhängig von anderen, ist mir sehr wichtig.
	Vertical Individualism

5	Es ist wichtig, dass ich meine Arbeit besser als andere erledige.
6	Gewinnen ist alles.
7	Wettbewerb ist das Gesetz der Natur.
8	Wenn eine andere Person etwas besser tut als ich, werde ich angespannt und aufgeregt.
	Horizontal Collectivism
9	Falls ein Kollege einen Preis bekäme, wäre ich stolz.
10	Mir ist das Wohlbefinden meiner Kollegen wichtig.
11	Für mich ist es ein Vergnügen, Zeit mit anderen zu verbringen.
12	Ich fühle mich gut, wenn ich mit anderen zusammenarbeite.
	Vertical Collectivism
13	Eltern und Kinder müssen so eng verbunden bleiben wie möglich.
14	Es ist meine Pflicht mich um meine Familie zu kümmern. Auch, wenn es bedeutet, dass ich dafür das opfern muss, was ich selbst will.
15	Egal welche Opfer dafür gebracht werden müssen: Familienmitglieder sollten zusammenhalten.
16	Es ist mir wichtig, dass ich die Entscheidungen meiner Gruppe respektiere.
	Scale of Culture-oriented Therapy Goals
	Individualism-Oriented
1	eine klarere Identität als einzigartiges Individuum gewinnen
2	das Gefühl entwickeln, das eigene Leben mehr bestimmen zu können
3	mehr Kraft haben, sich selbst zu verwirklichen und die eigene Persönlichkeit zu entfalten
4	die Fähigkeit gewinnen, besser für sich selbst zu sorgen
5	sich stärker mit dem auseinandersetzen, was Sie selbst wollen
6	Ihre Gefühle gegenüber anderen selbstbewusster ausdrücken
7	mehr Sicherheit in Situationen spüren, die zurzeit schwierig für Sie sind
	Collectivism-Oriented
1	klarere Identitätsfindung im sozialen Netzwerk, dem man angehört
2	mehr Harmonie in der zwischenmenschlichen Beziehung bewahren und Auseinandersetzung vermeiden
3	ein besseres Verständnis der eigenen Familie gewinnen und die Fähigkeit erreichen, ihr mehr Unterstützung zu geben
4	Zu lernen, wie man Kompromiss in den Konflikten Situation finden können und Konsens erreichen können
5	eine bessere Anpassung an vorgegebene soziale Rahmbedingungen erreichen
6	persönliche Ziele erfolgreicher zu erreichen, um Stotz in der Familie zu bringen und was die Gesellschaft beizutragen
7	Die Dinge so zu nehmen, wie sie kommen.

Supplemental Table S4. Internal consistency across scales and groups

	Chinese students	German students
Scale	α	α
SAP	.77	.68
ICS-HI	.61	.76
ICS-VI	.57	.71
ICS-HC	.67	.71
ICS-VC	.71	.70
SCOTG-IO	.90	.83
SCOTG-CO	.88	.81

Note: SAP = Scale of Attitude toward Psychotherapy; ICS-HI = Individualism and Collectivism Scale - Horizontal Individualism; ICS-VI = Individualism and Collectivism Scale - Vertical Individualism; ICS-HC = Individualism and Collectivism Scale - Horizontal Collectivism; ICS-VC = Individualism and Collectivism Scale - Vertical Collectivism; SCOTG-IO = Scale of Culture-oriented Therapy Goals = Individualism-Oriented; SCOTG-CO = Scale of Culture-oriented Therapy Goals = Collectivism-Oriented.

Supplemental Table S5. Factor loadings of the 5 Items of the Scale of Attitude toward Psychotherapy (SAP)

Item	Chinese sample	German sample
1	.85	.82
2	.70	.67
3	.79	.67
4	.48	.68
5	.82	.57

Supplemental Table S6. Factor loadings of the Individualism and Collectivism Scale

	Chinese sample				German sample			
	HC	HI	VC	VI	HC	HI	VC	VI
Item 1		.77				.85		
2		.70				.80		
3		.56				.75		
4		.49				.60		
5				.60				.77
6				.47				.71
7			.46					.62
8				.79				.74
9	.55				.78			
10	.53				.80			
11	.44				.39			
12			.72		.59			
13	.70						.83	
14	.74						.71	
15	.63						.80	
16	.58				.81			

Note. HC = Horizontal Collectivism, HI= Horizontal Individualism, VC = Vertical Collectivism, VI = Vertical Individualism.

Supplemental Table S7. Factor loadings of the Scale of Culture-oriented Therapy Goals = Collectivism-Oriented

Item	Chinese sample	German sample
1	.69	.65
2	.82	.71
3	.86	.83
4	.78	.60
5	.85	.70
6	.69	.79
7	.70	.44

Supplemental Table S8. Factor loadings of the Scale of Culture-oriented Therapy Goals = Individualism -Oriented

Item	Chinese sample	German sample
1	.65	.60
2	.71	.79
3	.90	.77
4	.81	.76
5	.85	.75
6	.90	.66
7	.85	.57

Supplemental Table S9. Summary of fit indices from the comparative factor analysis (CFA) and invariance analyses between groups for the Scale of Attitude toward Psychotherapy (SAP)

Model-SSRPH	χ^2 *(df)*	CFI	RMSEA [90% CI]	SRMR	ΔCFI	$\Delta\chi^2$ *(df)*
Single group CFA - one-factor model						
German students	11.220 (5)	.964	.080 [.008, .143]	.039		
Chinese students	5.628 (5)	.999	.018 [.000, .073]	.015		
Multiple group CFA models						
Model A: Configural invariance	16.849 (10)	.991	.048 [.000, .086]	.025		
Model B: Metric invariance	60.561 (15)	.940	.100 [.075, .127]	.268	.049	43.712 (5), p < .001
λ_5 free	38.543 (14)	.968	.076 [.048, .105]	.178	.023	21.694 (4), p < .001
λ_5, λ_1 free	21.098 (13)	.989	.045 [.000, .079]	.058	.002	4.249 (3), p > .001
Model C: Scalar invariance	69.114 (17)	.932	.101 [.077, .126]	.051	.067	48.016, p < .001
τ_2 free	47.062 (16)	.959	.080 [.054, .107]	.063	.030	25.964 (3), p < .001
τ_2, τ_3 free	30.321 (15)	.980	.058 [.027,.088]	.070	.009	9.223 (2), p > .001

Notes. λ_5 = "I assume that a psychotherapist has learned to behave correctly and helpfully towards someone who is mentally ill"; λ_1 = "I think people with mental illness can benefit from psychotherapy"; τ_2 = "The effects of psychotherapy are long-term"; τ_3 = "If I have a mental illness, I will take psychotherapy".

7.4 Anhang 4. Curriculum Vitae und Publikationen

7.4.1 Tabellarischer Lebenslauf

[Der Lebenslauf ist nicht Teil der Veröffentlichung.]

7.4.2 Publikationen

Zeitschriftenartikel (peer reviewed)

Zhou, Y., Lemmer, G., Xu, J. & Rief, W. (2019). Cross-cultural measurement invariance of scales assessing stigma and attitude to seeking professional psychological help. *Frontiers in Psychology.* 10:1249. https://doi.org/10.3389/fpsyg.2019.01249.

Zhou, Y., Xu, J. & Rief, W. (2020) Are comparisons of mental disorders between Chinese and German students possible? An examination of measurement invariance for the PHQ-15, PHQ-9 and GAD-7. *BMC Psychiatry 20*, 480. https://doi.org/10.1186/s12888-020-02859-8

Zhou, Y., Yang, Y. & Rief, W. (2020). A cultural value-oriented online intervention to improve attitude towards psychotherapy in China and Germany. Manuscript submitted at *Social Science and Medicine*.

7.5 Anhang 5. Eidesstattliche Erklärung

Ich versichere, dass ich meine Dissertation „Die Einstellung gegenüber Psychotherapie: Interkulturelle Vergleiche zwischen China und Deutschland“ selbstständig ohne unerlaubte Hilfe angefertigt und mich dabei keiner anderen als der von mir ausdrücklich bezeichneten Quellen und Hilfen bedient habe. Die Dissertation wurde in der jetzigen oder einer ähnlichen Form noch bei keiner anderen Hochschule eingereicht und hat noch keinen sonstigen Prüfungszwecken gedient.

Marburg, Oktober 2020 Yan Zhou